


| | | | |
|---|---|---|---------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 1 of 46 |



dB Technology
 |----- (Cambridge Ltd.) -----|
 EMC Testing EMC Consultancy EMC Training

23, Headington Drive,
 Cambridge.
 CB1 9HE
 Tel : 01954 251974 (test site)
 or : 01223 241140 (accounts)
 Fax : 01954 251907
 web : www.dbtechnology.co.uk
 email: mail@dbtechnology.co.uk

REPORT ON ELECTROMAGNETIC COMPATIBILITY TESTS

Performed at:
TWENTY PENCE TEST SITE

**Twenty Pence Road,
 Cottenham,
 Cambridge
 U.K.
 CB24 8PS**

on

Sureflap Ltd

DualScan

dated


29th August 2013

Document History

| Issue | Date | Affected page(s) | Description of modifications | Revised by | Approved by |
|-------|----------|------------------|---|------------|-------------|
| 1 | 29/08/13 | | Initial release | | |
| 2 | 26/09/13 | 13, 14, 15 | Extrapolation, Modulation, Bandwidth & Detector information added | DB | DS |
| | | | | | |
| | | | | | |
| | | | | | |

Based on report template:
 v090319

*This report shall not be reproduced except in full, without the written approval of:
 dB Technology (Cambridge) Ltd.*

| | | | |
|---|---|---|---------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 2 of 46 |

Equipment Under Test (EUT):

DualScan

Test Commissioned by:

Sureflap Ltd
7 The Irwin Centre
Scotland Road
Dry Drayton
Cambridgeshire
CB23 8AR

Representative:

Darren Cawthorne

Test Started:

22nd July 2013

Test Completed:

25th July 2013

Test Engineer:

Dave Smith

Date of Report:

29th August 2013

Written by: Dave Smith

Checked by: Derek Barlow

Signature:

D. A. Smith

Signature:

D. Barlow

Date: 29th August 2013

Date: 30th August 2013

dB Technology can only report on the specific unit(s) tested at its site. The responsibility for extrapolating this data to a product line lies solely with the manufacturer.


Test Standards Applied

CFR 47

Code of Federal Regulations: Pt 15 Subpart C - Radio Frequency Devices - Intentional Radiators

**RSS-210
Issue 8**

*Licence-exempt Radio Apparatus (All Frequency Bands):
Category I Equipment*

| | | | |
|---|---|---|---------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 3 of 46 |

Emissions Test Results Summary

CFR 47

PASS

| Test | Port | Method | Limit | PASS/FAIL | Notes |
|---------------------|----------|-----------------|--------|-----------|-------|
| Conducted Emissions | ac power | ANSI C63.4:2003 | 15.207 | N/A | #1 |
| Radiated Emissions | | ANSI C63.4:2003 | 15.209 | PASS | |

specs_fccv100412


- #1 This test was not applicable because the EUT was powered by an internal battery and has no means of connection to an ac power source.

RSS-210

PASS


| Test | Port | Method | Limit | PASS/FAIL | Notes |
|-----------------------------|-----------|-----------------|-----------------------|-----------|-------|
| Radiated Spurious Emissions | enclosure | ANSI C63.4:2003 | RSS_GEN Tables 5&6 | PASS | |

specs_canadav111211

| | | | |
|---|---|---|---------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 4 of 46 |

Contents

| | |
|--|----|
| 1 EUT Details | 5 |
| 1.1 General | 5 |
| 1.2 Modifications to EUT and Peripherals | 6 |
| 1.3 EUT Operating Modes | 6 |
| <i>Figure 1 General Arrangement of EUT</i> | 7 |
| <i>Photograph 1 Radiated Emissions - below 30MHz @10m</i> | 8 |
| <i>Photograph 2 Radiated Emissions - below 30MHz @10m</i> | 8 |
| <i>Photograph 3 Radiated Emissions - below 30MHz@ 100m</i> | 9 |
| <i>Photograph 4 Radiated Emissions - above 30MHz</i> | 9 |
| <i>Photograph 5 Radiated Emissions - above 30MHz</i> | 10 |
| 2 Test Equipment | 11 |
| 3 Test Methods | 12 |
| 3.1 Radiated Emissions below 30MHz | 12 |
| 3.2 Radiated Emissions above 30MHz | 12 |
| 4 Test Results | 12 |
| 4.1 Extrapolation of Limits to different distances. | 13 |
| 4.2 EUT Modulation and Measuring Bandwidths | 14 |
| 4.3 Radiated Emissions Results - Carrier | 15 |
| 4.4 Radiated Emissions Results - Spurious <30MHz - 80V Units | 16 |
| 4.5 Radiated Emissions Results - Spurious <30MHz - 120V Units | 17 |
| 4.6 Radiated Emissions Results - Spurious Above 30MHz | 18 |
| <i>PLOT 1 Radiated Emissions - LF - 80V - 9kHz to 150kHz</i> | 19 |
| <i>PLOT 2 Radiated Emissions - LF - 80V - 150kHz to 1.705MHz</i> | 20 |
| <i>PLOT 3 Radiated Emissions - LF - 80V - 1.705MHz to 30MHz</i> | 21 |
| <i>PLOT 4 Radiated Emissions - HF - 80V - 9kHz to 150kHz</i> | 22 |
| <i>PLOT 5 Radiated Emissions - HF - 80V - 150kHz to 1.705MHz</i> | 23 |
| <i>PLOT 6 Radiated Emissions - HF - 80V - 1.705MHz to 30MHz</i> | 24 |
| <i>PLOT 7 Radiated Emissions - LF - 120V - 9kHz to 150kHz</i> | 25 |
| <i>PLOT 8 Radiated Emissions - LF - 120V - 150kHz to 1.705MHz</i> | 26 |
| <i>PLOT 9 Radiated Emissions - LF - 120V - 1.705MHz to 30MHz</i> | 27 |
| <i>PLOT 10 Radiated Emissions - HF - 120V - 9kHz to 150kHz</i> | 28 |
| <i>PLOT 11 Radiated Emissions - HF - 120V - 150kHz to 1.705MHz</i> | 29 |
| <i>PLOT 12 Radiated Emissions - HF - 120V - 1.705MHz to 30MHz</i> | 30 |
| <i>PLOT 13 Radiated Emissions - Cycling all modes - 9kHz to 150kHz</i> | 31 |
| <i>PLOT 14 Radiated Emissions - Cycling all modes - 150kHz to 1.705MHz</i> | 32 |
| <i>PLOT 15 Radiated Emissions - Cycling all modes - 1.705MHz to 30MHz</i> | 33 |
| <i>PLOT 16 Radiated Emissions - LF - 80V - 25MHz to 275MHz</i> | 34 |
| <i>PLOT 17 Radiated Emissions - LF - 80V - 250MHz to 1GHz</i> | 35 |
| <i>PLOT 18 Radiated Emissions - HF - 80V - 25MHz to 275MHz</i> | 36 |
| <i>PLOT 19 Radiated Emissions - HF - 80V - 250MHz to 1GHz</i> | 37 |
| <i>PLOT 20 Radiated Emissions - LF - 120V - 25MHz to 275MHz</i> | 38 |
| <i>PLOT 21 Radiated Emissions - LF - 120V - 250MHz to 1GHz</i> | 39 |
| <i>PLOT 22 Radiated Emissions - HF - 120V - 25MHz to 275MHz</i> | 40 |
| <i>PLOT 23 Radiated Emissions - HF - 120V - 250MHz to 1GHz</i> | 41 |
| <i>PLOT 24 Radiated Emissions - Cycling all Tx Modes - 25MHz to 275MHz</i> | 42 |
| <i>PLOT 25 Radiated Emissions - Cycling all Tx Modes - 250MHz to 1GHz</i> | 43 |
| <i>PLOT 26 Radiated Emissions - Bandwidth at 126kHz</i> | 44 |
| <i>PLOT 27 Radiated Emissions - Bandwidth at 133kHz</i> | 45 |
| <i>PLOT 28 Radiated Emissions - Timing</i> | 46 |

| | | | |
|---|---|---|---------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 5 of 46 |

1 EUT Details

1.1 General

The EUT was pet flap with an RFID detector system. The EUT generates a magnetic field at one of two nominal frequencies: 126kHz or 133kHz. The driver output is set to one of two levels: 80V or 120V. Four samples were provided to constantly generate all four combinations of carrier level and frequency. A fifth sample was provided which continuously performed the normal read cycle which involves sequentially transmitting at all of the frequency / level combinations.

The EUT is powered from an internal battery and has no connecting cables.

The EUT was considered an intentional radiator under the rules of CFR 47 part 15 subpart C. The general limits for intentional radiators (section 15.209) were applied. The carrier frequencies do not fall within restricted bands of section 15.205.


The EUT was found to comply with the general emissions limits of FCC CFR47 Part 15.209.

For Canada the rules of RSS-210 were applied. The general limits for Licence-exempt apparatus were applied (Tables 5 and 6 of RSS-GEN Issue 2). These limits are identical to the limits applied for FCC testing.

The EUT was found to comply with the general emissions limits of RSS-210

Details of the EUT and associated peripherals used during the tests are listed below. Figure 1 shows the interconnections between the EUT and peripherals.

| Item | Manufacturer | Model | Description | Serial No: | Notes |
|------|--------------|----------|--|------------|-------|
| 1 | Sureflap Ltd | DualScan | EUT sample set at 126kHz, 120V | | |
| 2 | Sureflap Ltd | DualScan | EUT sample set at 126kHz, 80V | | |
| 3 | Sureflap Ltd | DualScan | EUT sample set at 132.8kHz, 120V | | |
| 4 | Sureflap Ltd | DualScan | EUT sample set at 132.8kHz, 80V | | |
| 5 | Sureflap Ltd | DualScan | EUT sample continuously cycle through read modes | | |

| | | | |
|---|---|---|---------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 6 of 46 |

1.2 Modifications to EUT and Peripherals

Details of any modifications that were required to achieve compliance are listed below. The modification numbers are referred to in the results sections as appropriate.

| Mod No: | Details | Implemented for |
|---------|---------------|-----------------|
| 0 | Original unit | |

1.3 EUT Operating Modes

The EUT was tested in the following operating mode or modes. Generally, operating modes are chosen that will exercise the functions of the EUT as fully as possible and in a manner likely to produce maximum emission levels or susceptibility. Individual test result sheets reference the operating mode of the EUT.

| Operating Mode | Details |
|----------------|--|
| 1 | Transmitting constantly at a fixed frequency and level. Normally the carrier is only activated when a cat enters the cat flap and so special test firmware was used to provide a constant transmission. |
| 2 | Running test firmware which continuously cycles through the normal read cycle, turning the RF on and off at the normal frequencies and levels. This mode was used to check that no transients occurred when turning the RF on and off. |


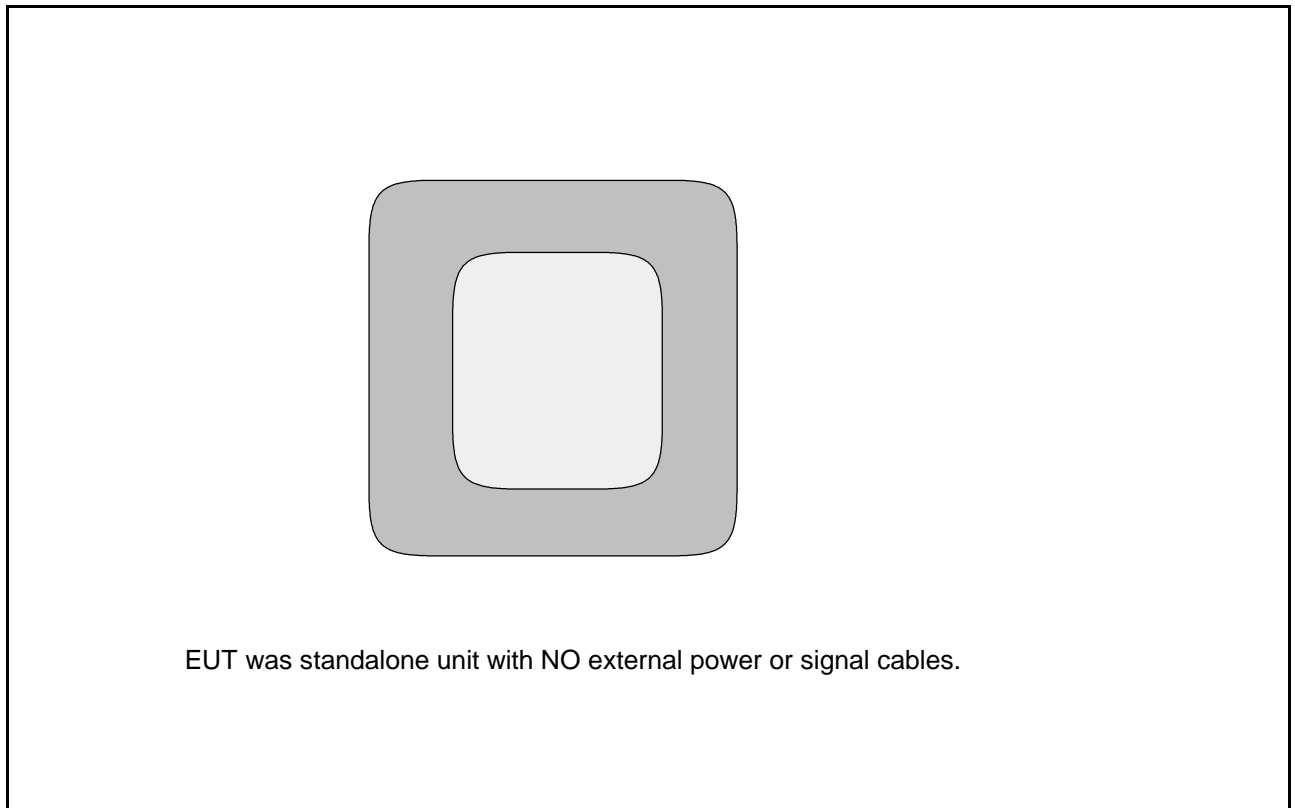

| | | | |
|---|---|---|---------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 7 of 46 |

Figure 1 General Arrangement of EUT




| | | | |
|---|---|---|---------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 8 of 46 |



Photograph 1 Radiated Emissions - below 30MHz @10m



Photograph 2 Radiated Emissions - below 30MHz @10m

| | | | |
|---|---|---|---------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 9 of 46 |




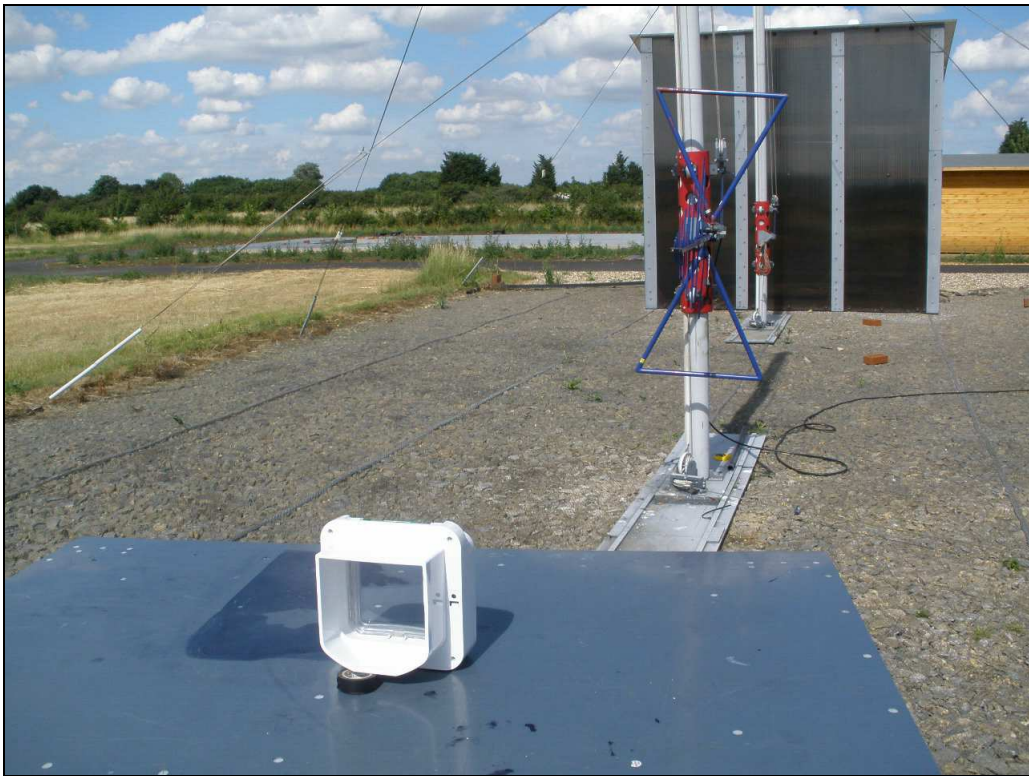
Photograph 3 Radiated Emissions - below 30MHz @ 100m




Photograph 4 Radiated Emissions - above 30MHz

*This report shall not be reproduced except in full, without the written approval of:
dB Technology (Cambridge) Ltd.*

| | | | |
|---|---|---|----------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 10 of 46 |



Photograph 5 Radiated Emissions - above 30MHz

| | | | |
|---|---|---|----------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 12 of 46 |

3 Test Methods

3.1 Radiated Emissions below 30MHz

This section describes the general method of performing this test. The specific method used and any deviations from this general method are listed in the appropriate results section.

Initial scans are performed in a semi-anechoic screened room at a distance of 3m. Scans are performed over the frequency range specified in the test standard with a loop antenna both co-axially and orthogonally orientated with respect to the EUT. During these scans the EUT and peripherals are rotated through 360°. Bench top EUTs are placed on a non-conducting bench at a height of 0.8m above the ground plane. Floor standing EUTs are placed 0.1m above the ground plane. The results of the scans are shown in the plots included at the end of the report.

Significant emissions identified by the scans are measured on an open area test site at the appropriate test distance using a CISPR16 quasi-peak receiver. Maximised readings are obtained by rotating the EUT through 360° with the antenna at a height of 1m. Measurements are made with the antenna both coaxially and orthogonally orientated with respect to the EUT and the results tabulated.

Tabulated results are obtained by adding the raw reading from the receiver (in dBuV) to the appropriate correction factors for the antenna and cables to give a reading in dBuV/m. For example:

| Frequency | Receiver reading | Correction Factor | Final level |
|-----------|------------------|-------------------|-------------|
| 126kHz | 75.8 dBuV | 8.0 dB/m | 83.8 dBuV/m |

Final reading = 75.8 + 8.0 = 83.8.

3.2 Radiated Emissions above 30MHz

This section describes the general method of performing this test. The specific method used and any deviations from this general method are listed in the appropriate results section.

Initial scans are performed in a semi-anechoic screened room at a distance of 3m. Scans are performed over the frequency range specified in the test standard with the antenna both horizontally and vertically polarised. During these scans the EUT and peripherals are rotated through 360°. Bench top EUTs are placed on a non-conducting bench at a height of 0.8m above the ground plane. Floor standing EUTs are placed 0.1m above the ground plane. The results of the scans are shown in the plots included at the end of the report.

Significant emissions identified by the scans are measured on an open area test site at the appropriate test distance using a CISPR16 quasi-peak receiver. Maximised readings are obtained by rotating the EUT through 360° and adjusting the height of the antenna from 1m to 4m. Measurements are made with the antenna both horizontally and vertically polarised and the results tabulated.


Tabulated results are obtained by adding the raw reading from the receiver (in dBuV) to the appropriate correction factors for the antenna and cables to give a reading in dBuV/m. For example:

| Frequency | Receiver reading | Correction Factor | Final level |
|-----------|------------------|-------------------|-------------|
| 160MHz | 5.9 dBuV | 12.6 dB/m | 18.5 dBuV/m |

Final reading = 5.9 + 12.6 = 18.5

4 Test Results

The following sections contain tabulated test results. Plots of various scans are included at the back of this section.

| | | | |
|---|---|---|----------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 13 of 46 |

4.1 Extrapolation of Limits to different distances.

The limits for emissions at frequencies below 490kHz are specified at a 300m distance and above 490kHz are specified at 30m. These distances are often impractical due to either geographic issues or the signal to be measured being below noise floor.

Extrapolation is permitted at a standard 40dB/decade of distance for these frequencies. The field strength calculations are as follows:

For frequencies below 490kHz: Field Strength (uV/m) at 300m = $2400 / f$ (kHz)

For frequencies above 490kHz and below 1.705MHz: Field Strength (uV/m) at 30m = $24000 / f$ (kHz)

Therefore, e.g. for 126kHz, Field Strength = $2400 / 126 = 19.05\text{uV/m}$ at 300m

Taking $20 \times \log(19.05)$ we get an equivalent field strength of 25.6 dBuV/m at 300m

Making a 40dB/decade adjustment for distance we have to add $40 \times \log(300\text{m} / D_m)$

For a distance of 100m we would therefore add $40 \times \log(300/100) = 19.08 \text{ dB}$

For a distance of 30m we would add $40 \times \log(300/30) = 40 \text{ dB}$ etc....


The table below shows the limit levels at different distances for the two fundamental frequencies and their lower harmonics, using this 40dB/decade extrapolation :

| | Frequency kHz | Reference Distance m | Reference Distance Level uV/m | Reference Distance Level dBuV/m | 40dB/dec Level at 100m dBuV/m | 40dB/dec Level at 30m dBuV/m | 40dB/dec Level at 10m dBuV/m | 40dB/dec Level at 3m dBuV/m |
|------|------------------|----------------------------|--|--|--|---------------------------------------|---------------------------------------|--------------------------------------|
| fund | 126 | 300 | 19.05 | 25.60 | 44.68 | 65.60 | 84.68 | 105.60 |
| fund | 133 | 300 | 18.05 | 25.13 | 44.21 | 65.13 | 84.21 | 105.13 |
| 2nd | 252 | 300 | 9.52 | 19.58 | 38.66 | 59.58 | 78.66 | 99.58 |
| 2nd | 266 | 300 | 9.02 | 19.11 | 38.19 | 59.11 | 78.19 | 99.11 |
| 3rd | 378 | 300 | 6.35 | 16.05 | 35.14 | 56.05 | 75.14 | 96.05 |
| 3rd | 399 | 300 | 6.02 | 15.58 | 34.67 | 55.58 | 74.67 | 95.58 |
| 4th | 504 | 30 | 47.62 | 33.56 | | 33.56 | 52.64 | 73.56 |
| 4th | 532 | 30 | 45.11 | 33.09 | | 33.09 | 52.17 | 73.09 |
| 5th | 630 | 30 | 38.10 | 31.62 | | 31.62 | 50.70 | 71.62 |
| 5th | 665 | 30 | 36.09 | 31.15 | | 31.15 | 50.23 | 71.15 |
| 6th | 756 | 30 | 31.75 | 30.03 | | 30.03 | 49.12 | 70.03 |
| 6th | 798 | 30 | 30.08 | 29.56 | | 29.56 | 48.65 | 69.56 |

NOTE:

Actual measurements showed that the levels at the fundamental frequencies dropped at a rate of 53.1dB per decade between 10m and 100m. This extrapolation factor was therefore used to extrapolate between the 100m limit and the 10m limit for the fundamental frequencies. The 100m limit was calculated from the 300m limit using the 40dB/decade factor.

The 40dB/decade factor was used for the assessment of all of the harmonic measurements.

| | | | |
|---|---|---|----------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 14 of 46 |

4.2 EUT Modulation and Measuring Bandwidths

The EUT transmits only unmodulated carriers at 126kHz and 133kHz. The carriers are alternately turned on and off. The on periods are between 80ms and 240ms each time - as shown in plot 28.

For carrier frequency level measurements a linear test receiver was used with a 200Hz bandwidth and a CISPR16 Average detector.


For Open Area Test Site measurements of the harmonics, which were at a much lower level and affected by ambients, it was necessary to use a spectrum analyser with a narrower bandwidth. A 3Hz resolution bandwidth was used with a 30Hz video bandwidth and a peak detector. In view of the characteristics of the signal this was considered to be acceptable, but, in order to confirm that these settings would provide reliable data, comparative tests were performed in the anechoic chamber at a measuring distance of 3m.

Results measured using a 9kHz bandwidth and CISPR16 quasi-peak detector were compared with results measured with the 3Hz / 30Hz / Peak Detector spectrum analyser setup. The results are shown below:

| Frequency kHz | 9kHz BW Quasi-Peak Measurement dBuV/m | 3Hz Receiver BW 30Hz Video BW Peak Measurement dBuV/m | Difference in Reading relative to Quasi-peak 9kHz dBuV/m |
|------------------|--|--|---|
| 252 | 66.65 | 66.58 | -0.07 |
| 378 | 56.79 | 57.50 | 0.71 |
| 504 | 48.82 | 48.86 | 0.04 |
| 630 | 47.31 | 46.54 | -0.77 |
| 756 | 49.12 | 48.88 | -0.24 |
| 266 | 71.06 | 71.10 | 0.04 |
| 399 | 64.29 | 64.53 | 0.24 |
| 531 | 56.94 | 56.94 | 0.00 |
| 664 | 52.04 | 52.10 | 0.06 |
| 797 | 49.62 | 49.51 | -0.11 |

NOTE: Relative measurements in an anechoic chamber - for comparison purposes only.

The measurement errors incurred by using this bandwidth can be seen to be less than +/- 1dB. The EUT harmonics measured using the 3Hz bandwidth all showed a margin of ≥ 6.8 dB, therefore any errors in measurement due to bandwidth and detector settings are insignificant in comparison with the margin displayed and the result shows a valid pass.


| | | | |
|---|---|---|----------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 15 of 46 |

4.3 Radiated Emissions Results - Carrier

Factor Set 1: A9_HI_V_13A CBL015_11A - -
Factor Set 2: - - - -
Factor Set 3: - - - -
Test Equipment: R10 A9

Radiated Emissions

| Company: Sureflap Ltd | | | | | | Product: DualScan | | | | | | | |
|-----------------------|---------|---|--------|----------|-----------|-------------------------|-----------------|--------------------|------------------|--------------------|--------------------|-----------------|-------|
| Date: 22/07/2013 | | | | | | Test Eng: Dave Smith | | | | | | | |
| Ports: | | | | | | | | | | | | | |
| Test: ANSI C63.4:2003 | | | | | | using limits of 15.209 | | | | =FCC B | | | |
| Ports: enclosure | | | | | | | | | | | | | |
| Test: ANSI C63.4:2003 | | | | | | using limits of RSS GEN | | | | | | | |
| Plot | Op Mode | Mod State | Dist m | Fact Set | Freq. MHz | Ant Pol | Rec. Level dBuV | Corr'n Factor dB/m | Corr'n Factor dB | Total Level dBuV/m | Limit FCC_B dBuV/m | Margin FCC_B dB | Notes |
| 120V systems | | | | | | | | | | | | | |
| 10 | 1 | 0 | 100 | 1 | 0.133 | F | 27.8 | 9.5 | | 37.3 | 44.2 | 6.9 | av |
| 10 | 1 | 0 | 100 | 1 | 0.133 | E | 23.5 | 9.5 | | 33.0 | 44.2 | 11.2 | av |
| 7 | 1 | 0 | 100 | 1 | 0.126 | F | 29.8 | 9.5 | | 39.3 | 44.7 | 5.4 | av |
| 7 | 1 | 0 | 100 | 1 | 0.126 | E | 24.9 | 9.5 | | 34.4 | 44.7 | 10.3 | av |
| | | | | | | | | | | | | | |
| 10 | 1 | 0 | 10 | 1 | 0.133 | F | 81.4 | 9.5 | | 90.9 | 97.3 | 6.4 | av |
| 10 | 1 | 0 | 10 | 1 | 0.133 | E | 77.6 | 9.5 | | 87.1 | 97.3 | 10.2 | av |
| 7 | 1 | 0 | 10 | 1 | 0.126 | F | 82.9 | 9.5 | | 92.4 | 97.8 | 5.4 | av |
| 7 | 1 | 0 | 10 | 1 | 0.126 | E | 78.6 | 9.5 | | 88.1 | 97.8 | 9.6 | av |
| Results | | | | | | | | | | | 5.4 dB | | |
| Minimum Margin | | | | | | | | | | | PASS | | |
| PASS/FAIL | | | | | | | | | | | | | |
| Notes | | Comments and Observations | | | | | | | | | | | |
| | | <p>The limit is specified at a distance of 300m. Initially measurements were made at 10m and a default extrapolation figure of 40dB/decade was applied. Under these conditions the units did not comply with the extrapolated limits, but the actual decay with distance was measured at 53.1dB/decade between 10m and 100m. The measurements made at 100m are shown above, with the limit at this distance adjusted using the 40dB/decade extrapolation. Results are also shown at 10m, using a limit adjusted by the 53.1dB factor as measured.</p> <p>Initial 10m measurements showed the emissions from 120V systems to be higher than from 80V systems and therefore final measurements were only performed on 120V units.</p> <p>The magnetic field scans are shown in plots 1 to 15.</p> | | | | | | | | | | | |
| Key: | | qp - quasi-peak, av - average, pk - peak F = loop face on to EUT, E = edge on | | | | | | | | | | | |


| | | | |
|---|---|---|----------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 16 of 46 |

4.4 Radiated Emissions Results - Spurious <30MHz - 80V Units

Factor Set 1: A9_HI_V_13A CBL015_11A - -
Factor Set 2: - - - -
Factor Set 3: - - - -
Test Equipment: R8 A9

Radiated Emissions

| Company: Sureflap Ltd | | | | | Product: DualScan | | | | | | | | | | |
|-----------------------|---------|---|--------|----------|----------------------|---------|-----------------|--------------------|------------------|--------------------|--------------------|-----------------|-------|--------|------|
| Date: 22/07/2013 | | | | | Test Eng: Dave Smith | | | | | | | | | | |
| Ports: | | | | | | | | | | | | | | | |
| Test: | | ANSI C63.4:2003 | | | using limits of | | | 15.209 | | =FCC B | | | | | |
| Ports: enclosure | | | | | | | | | | | | | | | |
| Test: | | ANSI C63.4:2003 | | | using limits of | | | RSS GEN | | | | | | | |
| Plot | Op Mode | Mod State | Dist m | Fact Set | Freq. MHz | Ant Pol | Rec. Level dBuV | Corr'n Factor dB/m | Corr'n Factor dB | Total Level dBuV/m | Limit FCC_B dBuV/m | Margin FCC_B dB | Notes | | |
| 5 | 1 | 0 | 10 | 1 | 0.266 | F | 46.2 | 9.5 | | 55.7 | 78.2 | 22.5 | #1 | | |
| 5 | 1 | 0 | 10 | 1 | 0.266 | E | 40.9 | 9.5 | | 50.4 | 78.2 | 27.8 | | | |
| 5 | 1 | 0 | 10 | 1 | 0.399 | F | 42.4 | 9.5 | | 51.9 | 74.7 | 22.7 | | | |
| 5 | 1 | 0 | 10 | 1 | 0.399 | E | 37.4 | 9.5 | | 46.9 | 74.7 | 27.8 | | | |
| 5 | 1 | 0 | 10 | 1 | 0.531 | F | 35.9 | 9.5 | | 45.4 | 52.2 | 6.8 | | | |
| 5 | 1 | 0 | 10 | 1 | 0.531 | E | 30.4 | 9.5 | | 39.9 | 52.2 | 12.3 | | | |
| 5 | 1 | 0 | 10 | 1 | 0.664 | F | 22.0 | 9.5 | | 31.5 | 50.2 | 18.8 | | | |
| 5 | 1 | 0 | 10 | 1 | 0.664 | E | 17.5 | 9.5 | | 27.0 | 50.2 | 23.3 | | | |
| 5 | 1 | 0 | 10 | 1 | 0.797 | F | 28.7 | 9.5 | | 38.2 | 48.7 | 10.4 | | | |
| 5 | 1 | 0 | 10 | 1 | 0.797 | E | 20.5 | 9.5 | | 30.0 | 48.7 | 18.6 | | | |
| 2 | 1 | 0 | 10 | 1 | 0.252 | F | 39.8 | 9.4 | | 49.3 | 78.7 | 29.4 | | | |
| 2 | 1 | 0 | 10 | 1 | 0.252 | E | 39.9 | 9.4 | | 49.3 | 78.7 | 29.4 | | | |
| 2 | 1 | 0 | 10 | 1 | 0.378 | F | 38.3 | 9.3 | | 47.6 | 75.1 | 27.5 | | | |
| 2 | 1 | 0 | 10 | 1 | 0.378 | E | 33.9 | 9.3 | | 43.3 | 75.1 | 31.9 | | | |
| 2 | 1 | 0 | 10 | 1 | 0.504 | F | 34.0 | 9.5 | | 43.5 | 52.6 | 9.1 | | | |
| 2 | 1 | 0 | 10 | 1 | 0.504 | E | 29.3 | 9.5 | | 38.8 | 52.6 | 13.9 | | | |
| 2 | 1 | 0 | 3 | 1 | 0.630 | F | 54.2 | 9.5 | | 63.6 | 71.6 | 8.0 | | | |
| 2 | 1 | 0 | 10 | 1 | 0.630 | E | 21.5 | 9.5 | | 31.0 | 50.7 | 19.7 | | | |
| 2 | 1 | 0 | 10 | 1 | 0.756 | F | 25.4 | 9.5 | | 34.9 | 49.1 | 14.2 | | | |
| 2 | 1 | 0 | 10 | 1 | 0.756 | E | 21.7 | 9.5 | | 31.2 | 49.1 | 17.9 | | | |
| Results | | | | | | | | | | | Minimum Margin | | | 6.8 dB | PASS |
| | | | | | | | | | | | PASS/FAIL | | | | |
| Notes | | Comments and Observations | | | | | | | | | | | | | |
| #1 | | 80V units. Results of scans shown in plots 1 to 6. | | | | | | | | | | | | | |
| | | Limits adjusted for measurement distances using a default extrapolation of 40dB/decade. All measurements made with peak detector. | | | | | | | | | | | | | |
| | | Measured at 3m because of high ambient. | | | | | | | | | | | | | |


| | | | |
|---|---|---|----------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 17 of 46 |

4.5 Radiated Emissions Results - Spurious <30MHz - 120V Units

Factor Set 1: A9_HI_V_13A CBL015_11A - -
Factor Set 2: - - - -
Factor Set 3: - - - -
Test Equipment: R8 A9

Radiated Emissions

| Company: Sureflap Ltd | | | | | Product: DualScan | | | | | | | | | |
|-----------------------|---------|--|--------|----------|----------------------|---------|-----------------|--------------------|------------------|--------------------|--------------------|-----------------|--------|------|
| Date: 22/07/2013 | | | | | Test Eng: Dave Smith | | | | | | | | | |
| Ports: | | | | | | | | | | | | | | |
| Test: ANSI C63.4:2003 | | | | | using limits of | | | 15.209 | | =FCC B | | | | |
| Ports: enclosure | | | | | | | | | | | | | | |
| Test: ANSI C63.4:2003 | | | | | using limits of | | | RSS GEN | | | | | | |
| Plot | Op Mode | Mod State | Dist m | Fact Set | Freq. MHz | Ant Pol | Rec. Level dBuV | Corr'n Factor dB/m | Corr'n Factor dB | Total Level dBuV/m | Limit FCC_B dBuV/m | Margin FCC_B dB | Notes | |
| 8 | 1 | 0 | 10 | 1 | 0.252 | F | 39.1 | 9.4 | | 48.5 | 78.7 | 30.1 | #1 | |
| 8 | 1 | 0 | 10 | 1 | 0.252 | E | 34.8 | 9.4 | | 44.2 | 78.7 | 34.5 | | |
| 8 | 1 | 0 | 10 | 1 | 0.378 | F | 32.5 | 9.3 | | 41.8 | 75.1 | 33.4 | | |
| 8 | 1 | 0 | 10 | 1 | 0.378 | E | 28.9 | 9.3 | | 38.2 | 75.1 | 36.9 | | |
| 8 | 1 | 0 | 10 | 1 | 0.504 | F | 26.2 | 9.5 | | 35.7 | 52.6 | 17.0 | | |
| 8 | 1 | 0 | 10 | 1 | 0.504 | E | 21.1 | 9.5 | | 30.6 | 52.6 | 22.1 | | |
| 8 | 1 | 0 | 3 | 1 | 0.630 | F | 50.9 | 9.5 | | 60.4 | 71.6 | 11.3 | | |
| 8 | 1 | 0 | 10 | 1 | 0.630 | E | 26.5 | 9.5 | | 36.0 | 50.7 | 14.7 | | |
| 8 | 1 | 0 | 10 | 1 | 0.756 | F | 24.8 | 9.5 | | 34.3 | 49.1 | 14.8 | | |
| 8 | 1 | 0 | 10 | 1 | 0.756 | E | 20.7 | 9.5 | | 30.2 | 49.1 | 18.9 | | |
| 11 | 1 | 0 | 10 | 1 | 0.266 | F | 45.0 | 9.5 | | 54.5 | 78.2 | 23.7 | | |
| 11 | 1 | 0 | 10 | 1 | 0.266 | E | 39.9 | 9.5 | | 49.4 | 78.2 | 28.8 | | |
| 11 | 1 | 0 | 10 | 1 | 0.399 | F | 38.9 | 9.5 | | 48.4 | 74.7 | 26.2 | | |
| 11 | 1 | 0 | 10 | 1 | 0.399 | E | 33.8 | 9.5 | | 43.3 | 74.7 | 31.4 | | |
| 11 | 1 | 0 | 10 | 1 | 0.531 | F | 31.7 | 9.5 | | 41.2 | 52.2 | 11.0 | | |
| 11 | 1 | 0 | 10 | 1 | 0.531 | E | 26.6 | 9.5 | | 36.1 | 52.2 | 16.1 | | |
| 11 | 1 | 0 | 10 | 1 | 0.664 | F | 26.6 | 9.5 | | 36.0 | 50.2 | 14.2 | | |
| 11 | 1 | 0 | 10 | 1 | 0.664 | E | 22.2 | 9.5 | | 31.7 | 50.2 | 18.5 | | |
| 11 | 1 | 0 | 10 | 1 | 0.797 | F | 31.2 | 9.5 | | 40.7 | 48.7 | 7.9 | | |
| 11 | 1 | 0 | 10 | 1 | 0.797 | E | 21.4 | 9.5 | | 30.9 | 48.7 | 17.8 | | |
| Results | | | | | | | | | | | Minimum Margin | | 7.9 dB | PASS |
| | | | | | | | | | | | PASS/FAIL | | | |
| Notes | | Comments and Observations | | | | | | | | | | | | |
| #1 | | 120V units. Results of scans shown in plots 7 to 12. Limits adjusted for measurement distances using a default extrapolation of 40dB/m. All measurements made with peak detector. Measured at 3m because of high ambient. | | | | | | | | | | | | |


| | | | |
|---|---|---|----------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 18 of 46 |

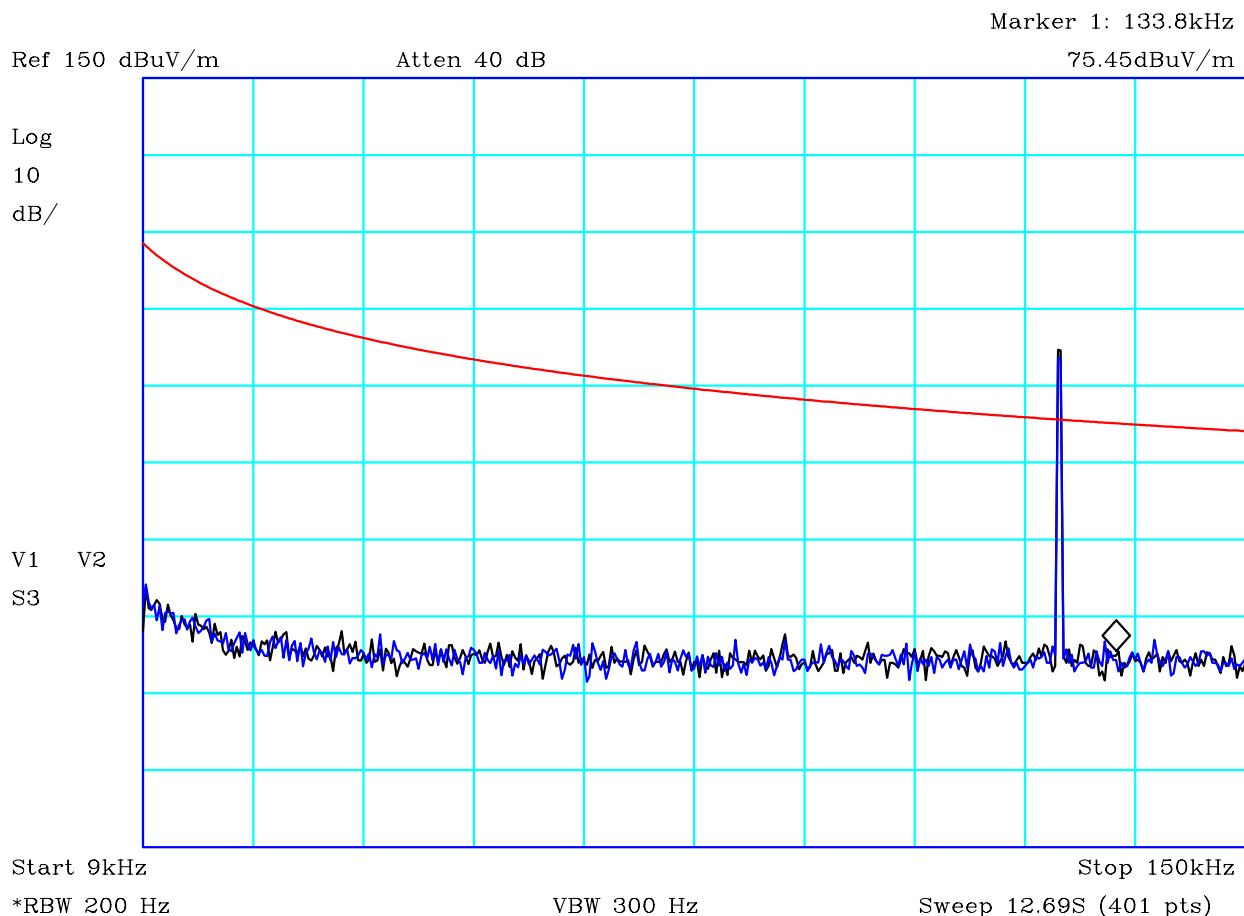
4.6 Radiated Emissions Results - Spurious Above 30MHz

Factor Set 1: A12_FS_13B CBL015_11A - -
Factor Set 2: - - - -
Factor Set 3: - - - -
Test Equipment: R4 A12

Radiated Emissions

| Company: Sureflap Ltd | | | | | Product: DualScan | | | | | | | | |
|---|---|-----------|--------|----------|----------------------|---------|-----------------|--------------------|------------------|--------------------|--------------------|-----------------|-------|
| Date: 24/07/2013 | | | | | Test Eng: Dave Smith | | | | | | | | |
| Ports: | | | | | | | | | | | | | |
| Test: ANSI C63.4:2003 | | | | | using limits of | | | 15.209 | | =FCC B | | | |
| Ports: enclosure | | | | | | | | | | | | | |
| Test: ANSI C63.4:2003 | | | | | using limits of | | | RSS GEN | | | | | |
| Plot | Op Mode | Mod State | Dist m | Fact Set | Freq. MHz | Ant Pol | Rec. Level dBuV | Corr'n Factor dB/m | Corr'n Factor dB | Total Level dBuV/m | Limit FCC_B dBuV/m | Margin FCC_B dB | Notes |
| 24 | 1 | 0 | 3 | 1 | 117.970 | V | 0.6 | 13.0 | | 13.6 | 43.5 | 29.9 | qp |
| 24 | 1 | 0 | 3 | 1 | 117.970 | H | 4.3 | 13.0 | | 17.3 | 43.5 | 26.2 | qp |
| 24 | 1 | 0 | 3 | 1 | 137.631 | V | 0.2 | 13.0 | | 13.2 | 43.5 | 30.3 | qp |
| 24 | 1 | 0 | 3 | 1 | 137.631 | H | 2.2 | 13.0 | | 15.2 | 43.5 | 28.3 | qp |
| 24 | 1 | 0 | 3 | 1 | 157.295 | V | 0.2 | 12.1 | | 12.3 | 43.5 | 31.2 | qp |
| 24 | 1 | 0 | 3 | 1 | 157.295 | H | 5.7 | 12.1 | | 17.8 | 43.5 | 25.7 | qp |
| Results | | | | | | | | | | | Minimum Margin | | |
| | | | | | | | | | | | PASS/FAIL | | |
| | | | | | | | | | | | 25.7 | dB | |
| | | | | | | | | | | | PASS | | |
| Notes | Comments and Observations | | | | | | | | | | | | |
| | Results of scans shown in plots 16 to 25. | | | | | | | | | | | | |
| | Emissions above were made on the sample which cycled through all modes - which gave higher emissions during prescans. | | | | | | | | | | | | |
| Key: qp - quasi-peak, av - average, pk - peak | | | | | | | | | | | | | |


| | | | |
|---|---|---|-----------------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 19 of 46 |

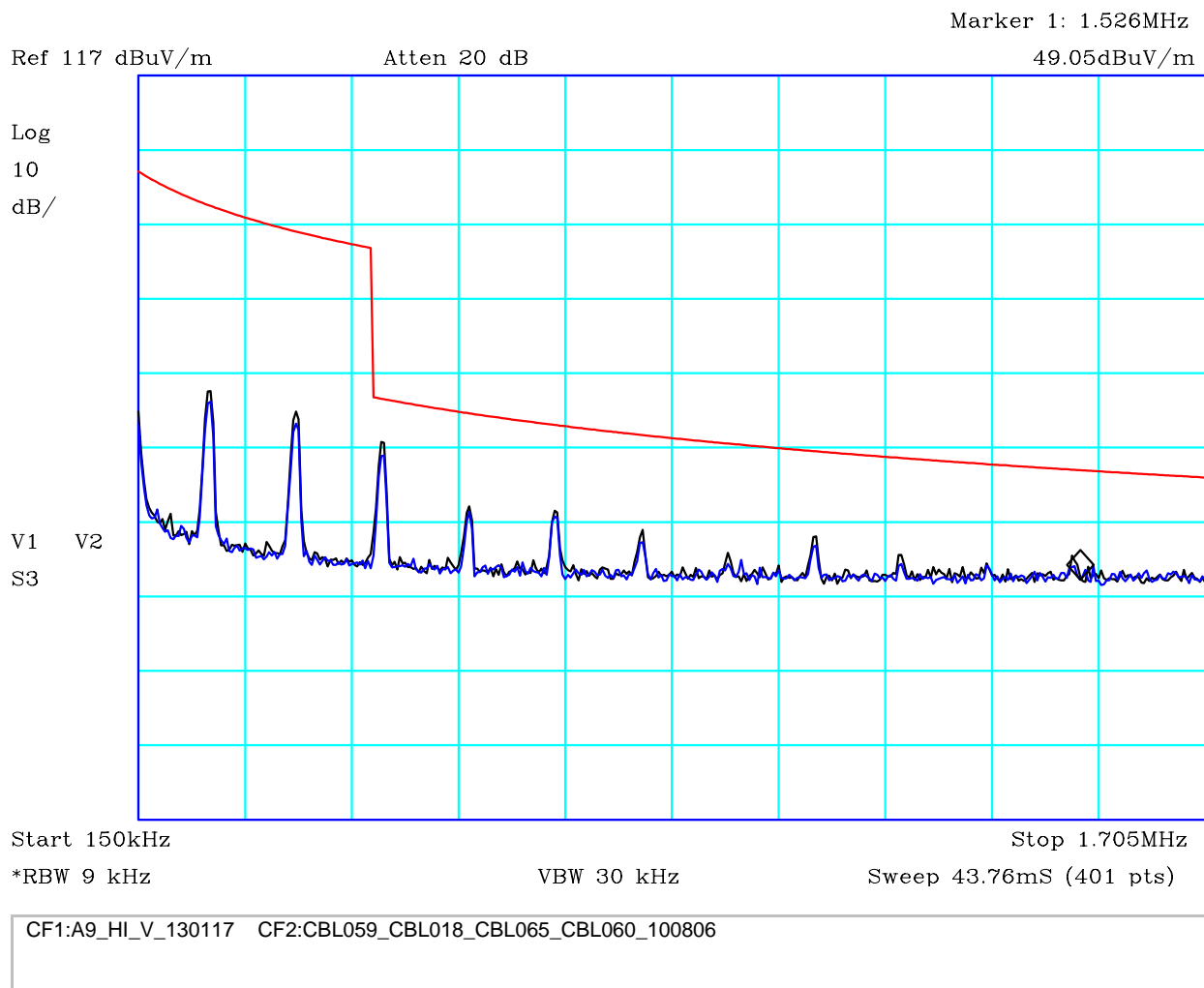


CF1:A9_HI_V_130117 CF2:CBL059_CBL018_CBL065_CBL060_100806

PLOT 1 Radiated Emissions - LF - 80V - 9kHz to 150kHz


| | | | |
|---|---------------------------|---------------------|------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 25/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(RED) | FCC_subpartC_@3m_40dB/dec | Limit2: | |
| Limit3: | | Limit4: | |
| Black: face on Blue: perpendicular 126kHz 80V Every 90 degs The red limit is the FCC part 15.209 limit extrapolated to 3m using a default 40dB per decade. In practice an extrapolation of closer to 60dB per decade could be expected which would significantly increase the margins. | | | |
| Facility: | Anech_2 | Height | 1m |
| Distance | 3m | Polarisation | |
| Angle | 0-360 | File: | H36255C3 |
| | | Mode: | 1 |
| | | Modification State: | 0 |
| | | Analysers: | R8 |

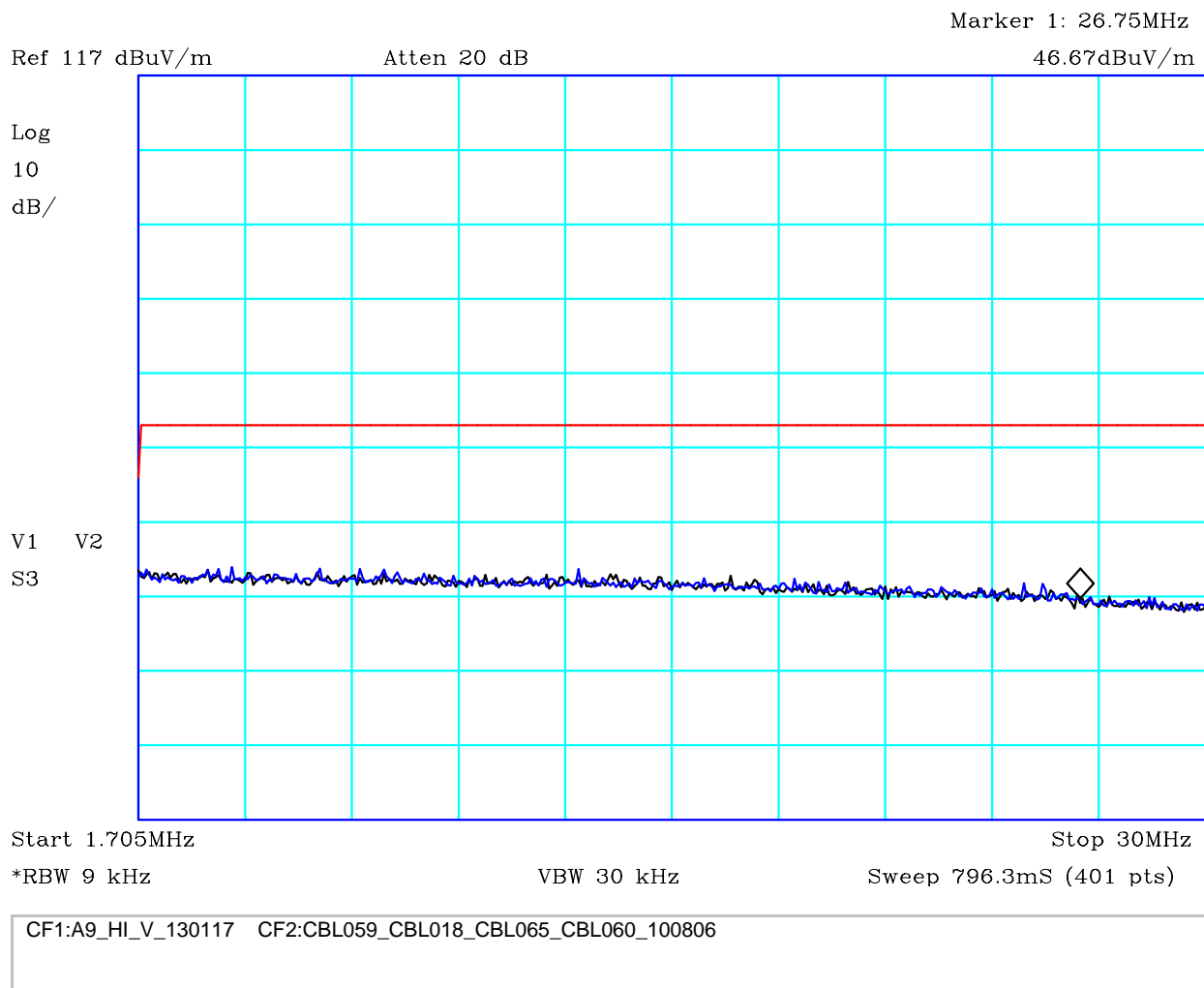
| | | | |
|---|---|---|----------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 20 of 46 |



PLOT 2 Radiated Emissions - LF - 80V - 150kHz to 1.705MHz


| | | | |
|---|---------------------------|---------------------|------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 25/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(RED) | FCC_subpartC_@3m_40dB/dec | Limit2: | |
| Limit3: | | Limit4: | |
| Black: face on Blue: perpendicular 126kHz 80V The red limit is the FCC part 15.209 limit extrapolated to 3m using a default 40dB per decade. In practice, an extrapolation of closer to 60dB per decade could be expected which would significantly increase the margins. | | | |
| Facility: | Anech_2 | Height | 1m |
| Distance | 3m | Polarisation | |
| Angle | 0-360 | File: | H3625600 |
| | | Mode: | 1 |
| | | Modification State: | 0 |
| | | Analysar: | R8 |

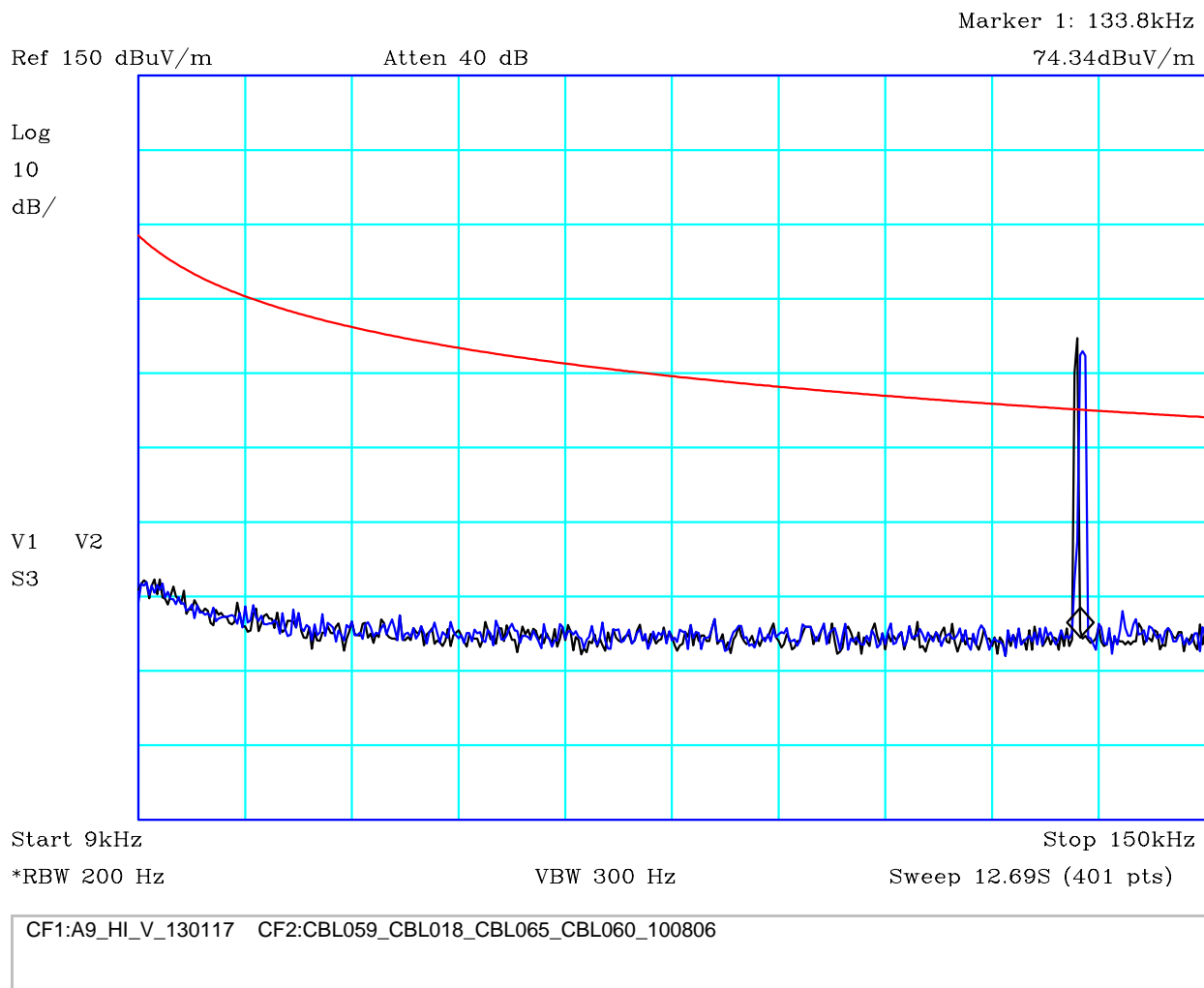
| | | | |
|---|---|---|-----------------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 21 of 46 |



PLOT 3 Radiated Emissions - LF - 80V - 1.705MHz to 30MHz


| | | | |
|---|---------------------------|---------------------|------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 25/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(RED) | FCC_subpartC_@3m_40dB/dec | Limit2: | |
| Limit3: | | Limit4: | |
| Black: face on Blue: perpendicular 126kHz 80V The red limit is the FCC part 15.209 limit extrapolated to 3m using a default 40dB per decade. In practice, an extrapolation of closer to 60dB per decade could be expected which would significantly increase the margins. | | | |
| Facility: | Anech_2 | Height | 1m |
| Distance | 3m | Polarisation | |
| Angle | 0-360 | File: | H3625604 |
| | | Mode: | 1 |
| | | Modification State: | 0 |
| | | Analysers: | R8 |

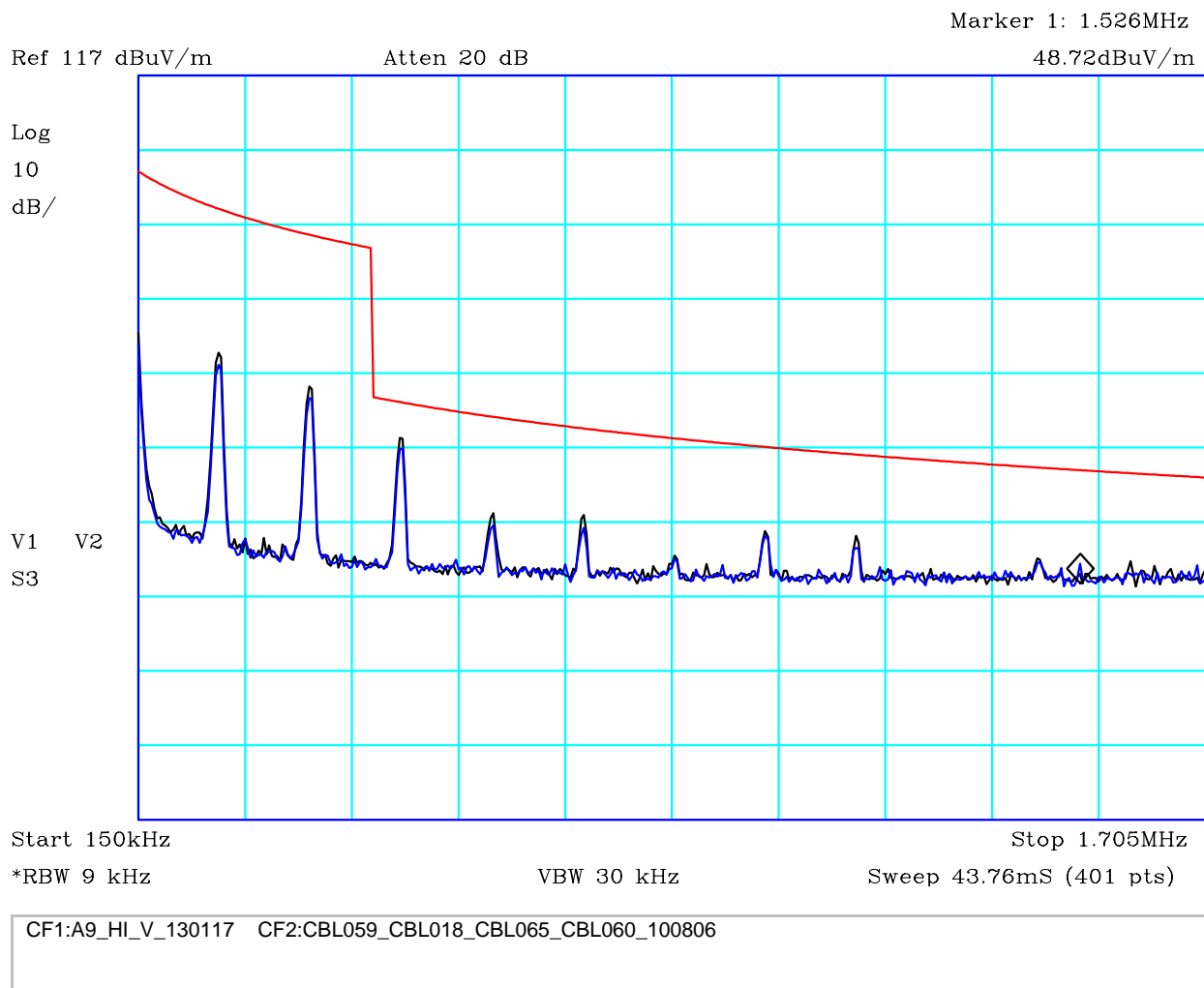
| | | | |
|---|---|---|----------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 22 of 46 |



PLOT 4 Radiated Emissions - HF - 80V - 9kHz to 150kHz


| | | | |
|--|---------------------------|---------------------|------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 25/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(RED) | FCC_subpartC_@3m_40dB/dec | Limit2: | |
| Limit3: | | Limit4: | |
| Black: face on Blue: perpendicular 133kHz 80V Every 90 degs The red limit is the FCC part 15.209 limit extrapolated to 3m using a default 40dB per decade. In practice, an extrapolation of closer to 60dB per decade could be expected which would significantly increase the margins. | | | |
| Facility: | Anech_2 | Height | 1m |
| Distance | 3m | Polarisation | |
| Angle | 0-360 | File: | H36255CF |
| | | Mode: | 1 |
| | | Modification State: | 0 |
| | | Analysers: | R8 |

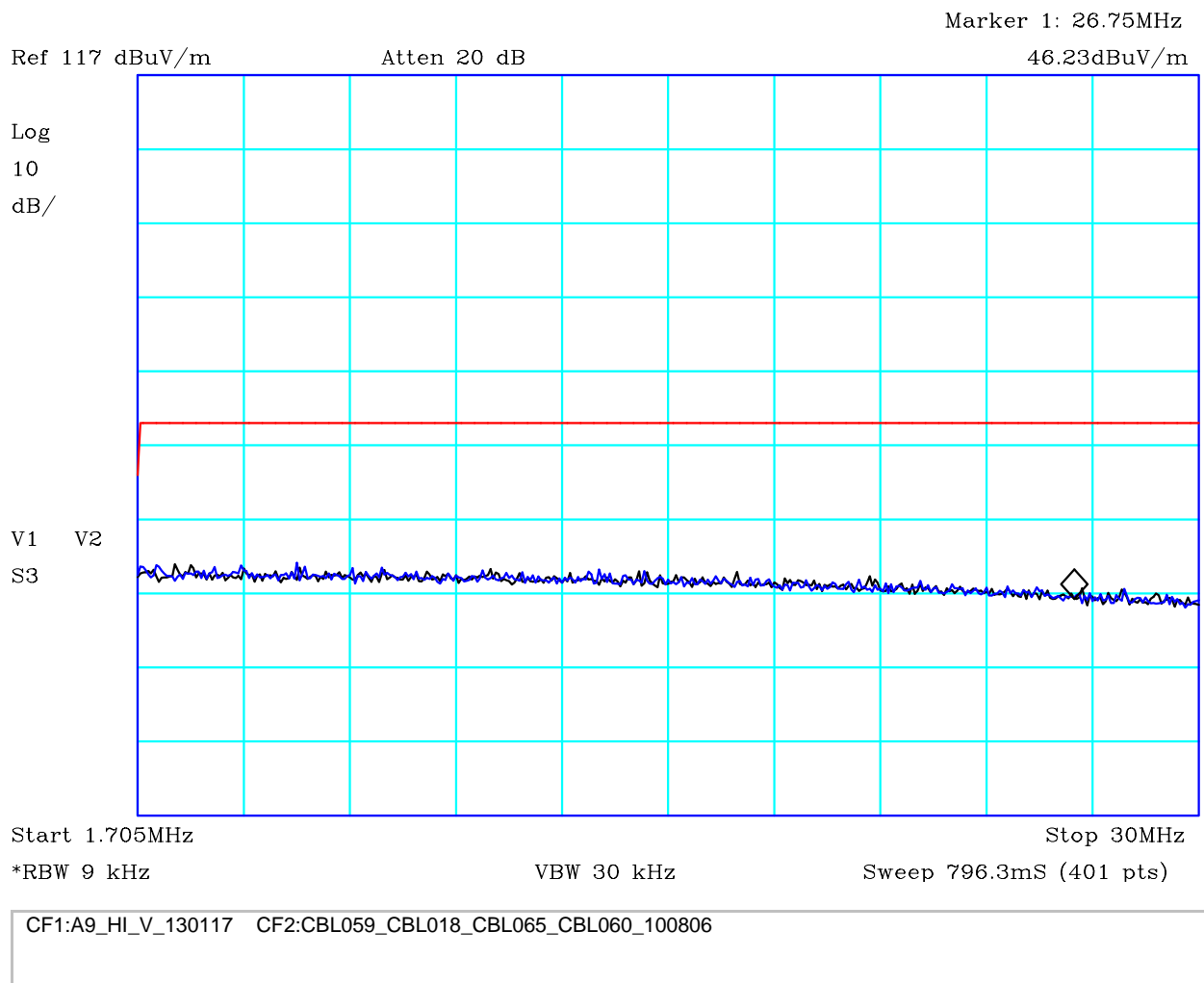
| | | | |
|---|---|---|-----------------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 23 of 46 |



PLOT 5 Radiated Emissions - HF - 80V - 150kHz to 1.705MHz

| | | | |
|---|---------------------------|---------------------|------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 25/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(RED) | FCC_subpartC_@3m_40dB/dec | Limit2: | |
| Limit3: | | Limit4: | |
| Black: face on Blue: perpendicular 133kHz 80V The red limit is the FCC part 15.209 limit extrapolated to 3m using a default 40dB per decade. In practice, an extrapolation of closer to 60dB per decade could be expected which would significantly increase the margins. | | | |
| Facility: | Anech_2 | Height | 1m |
| Distance | 3m | Polarisation | |
| Angle | 0-360 | File: | H36255FA |
| | | Mode: | 1 |
| | | Modification State: | 0 |
| | | Analysers: | R8 |

| | | | |
|---|-------------------------|-----------------------|-----------------------|
|  | Report No: R3261 | FCC ID: XO9-DSCF-1001 | |
| | Issue No: 2 | IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 24 of 46 |




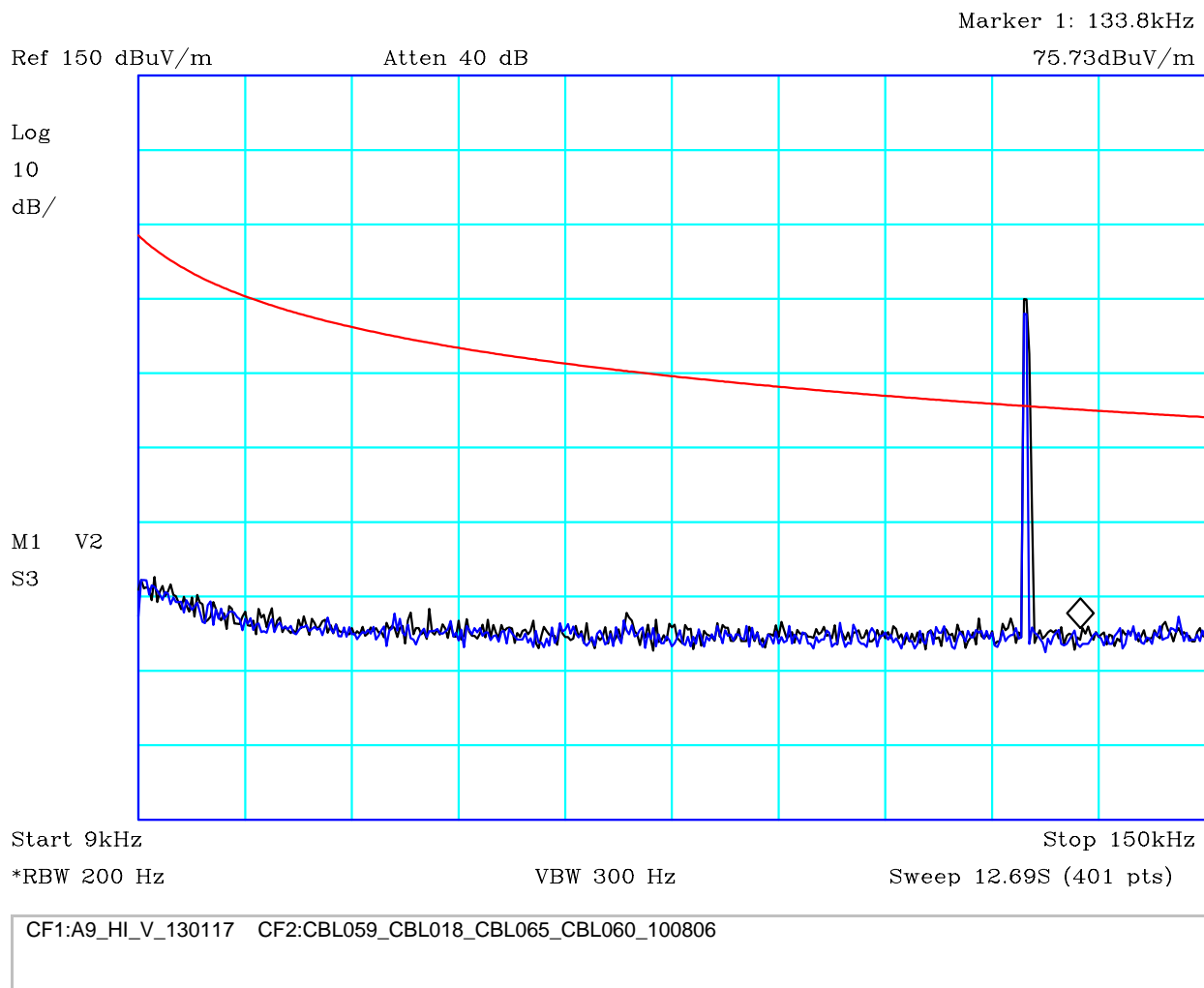
PLOT 6 Radiated Emissions - HF - 80V - 1.705MHz to 30MHz

| | | | |
|--------------|---------------------------|-----------|------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 25/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(RED) | FCC_subpartC_@3m_40dB/dec | Limit2: | |
| Limit3: | | Limit4: | |

Black: face on Blue: perpendicular
133kHz 80V
The red limit is the FCC part 15.209 limit extrapolated to 3m using a default 40dB per decade. In practice, an extrapolation of closer to 60dB per decade could be expected which would significantly increase the margins.


| | | | | | |
|-----------|---------|--------------|----------|---------------------|----|
| Facility: | Anech_2 | Height | 1m | Mode: | 1 |
| Distance | 3m | Polarisation | | Modification State: | 0 |
| Angle | 0-360 | File: | H36255F5 | Analyser: | R8 |

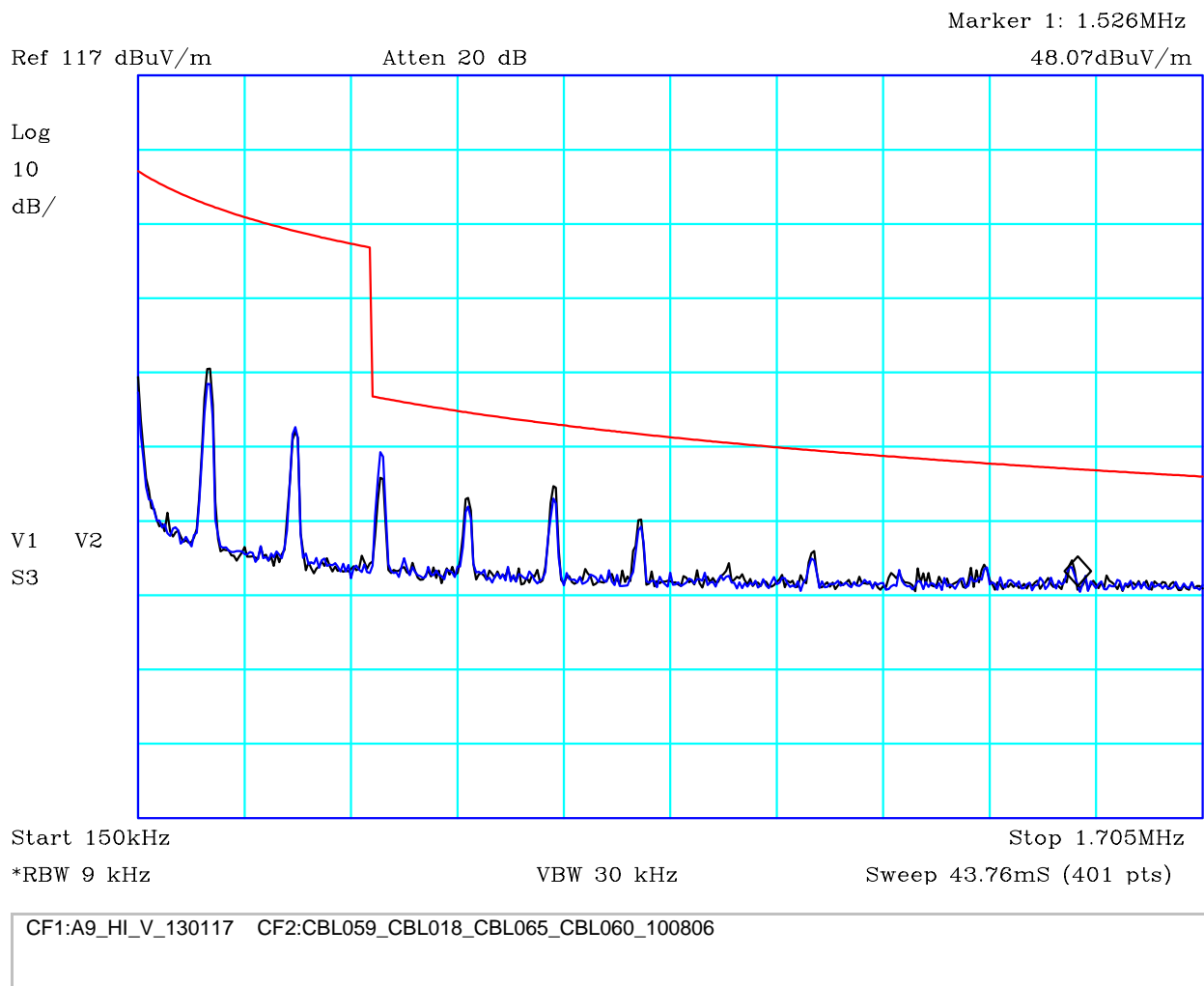
| | | | |
|---|---|---|-----------------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 25 of 46 |



PLOT 7 Radiated Emissions - LF - 120V - 9kHz to 150kHz


| | | | |
|--|---------------------------|---------------------|------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 22/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(RED) | FCC_subpartC_@3m_40dB/dec | Limit2: | |
| Limit3: | | Limit4: | |
| Black: face onl Blue: perpendicular 126kHz 120V. The red limit is the FCC part 15.209 limit extrapolated to 3m using a default 40dB per decade. In practice, an extrapolation of closer to 60dB per decade could be expected which would significantly increase the margins. | | | |
| Facility: | Anech_2 | Height | 1m |
| Distance | 3m | Polarisation | |
| Angle | 0-360 | File: | H3622545 |
| | | Mode: | 1 |
| | | Modification State: | 0 |
| | | Analysers: | R8 |

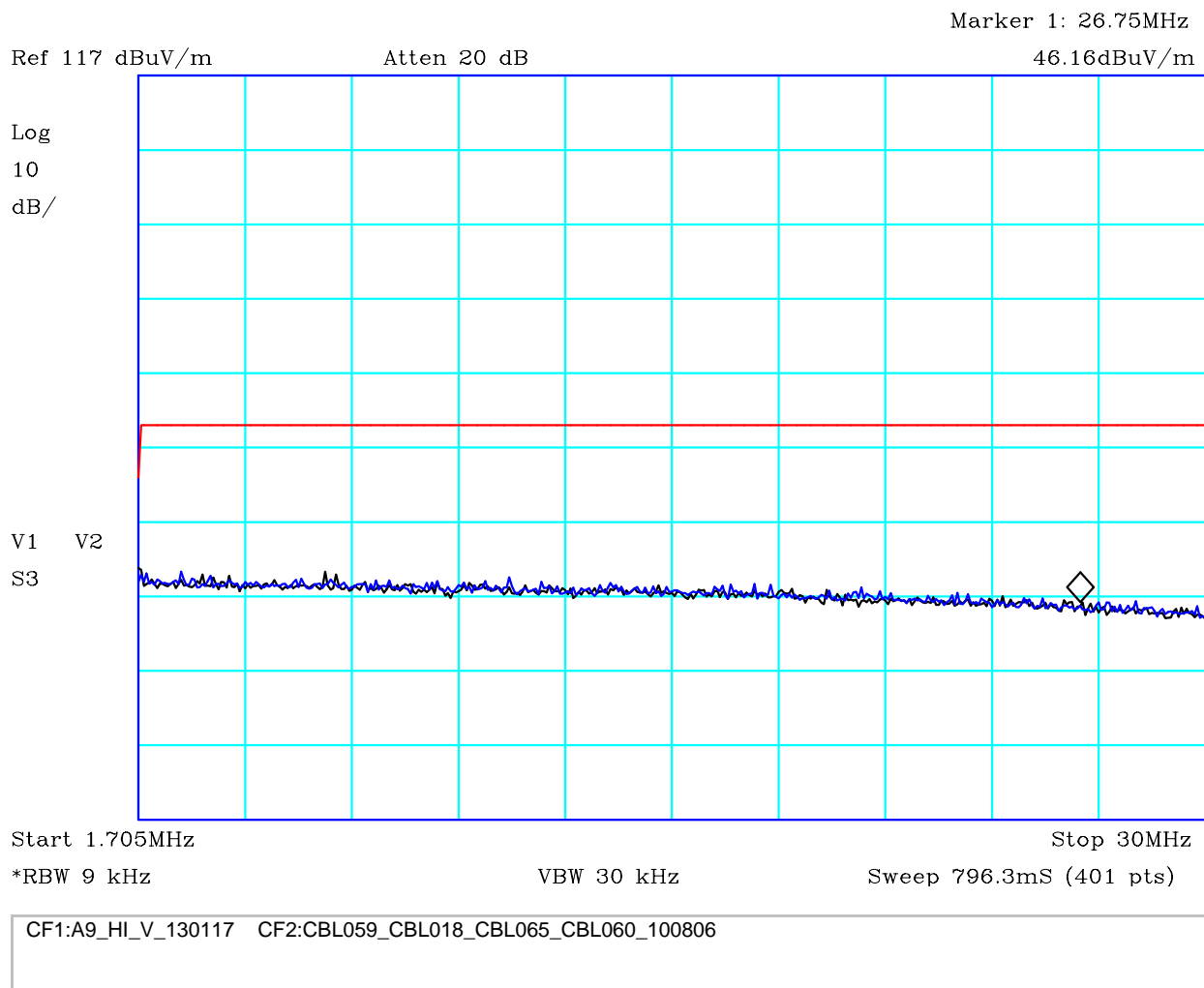
| | | | |
|---|---|---|----------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 26 of 46 |



PLOT 8 Radiated Emissions - LF - 120V - 150kHz to 1.705MHz

| | | | |
|--|---------------------------|---------------------|------------|
| Company: | Sureflap ltd | Product: | DualScan |
| Date: | 22/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(RED) | FCC_subpartC_@3m_40dB/dec | Limit2: | |
| Limit3: | | Limit4: | |
| Black: face onl Blue: perpendicular 126kHz 120V. The red limit is the FCC part 15.209 limit extrapolated to 3m using a default 40dB per decade. In practice, an extrapolation of closer to 60dB per decade could be expected which would significantly increase the margins. | | | |
| Facility: | Anech_2 | Height | 1m |
| Distance | 3m | Polarisation | |
| Angle | 0-360 | File: | H3622525 |
| | | Mode: | 1 |
| | | Modification State: | 0 |
| | | Analysers: | R8 |

| | | | |
|---|-------------------------|-----------------------|-----------------------|
|  | Report No: R3261 | FCC ID: XO9-DSCF-1001 | |
| | Issue No: 2 | IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 27 of 46 |




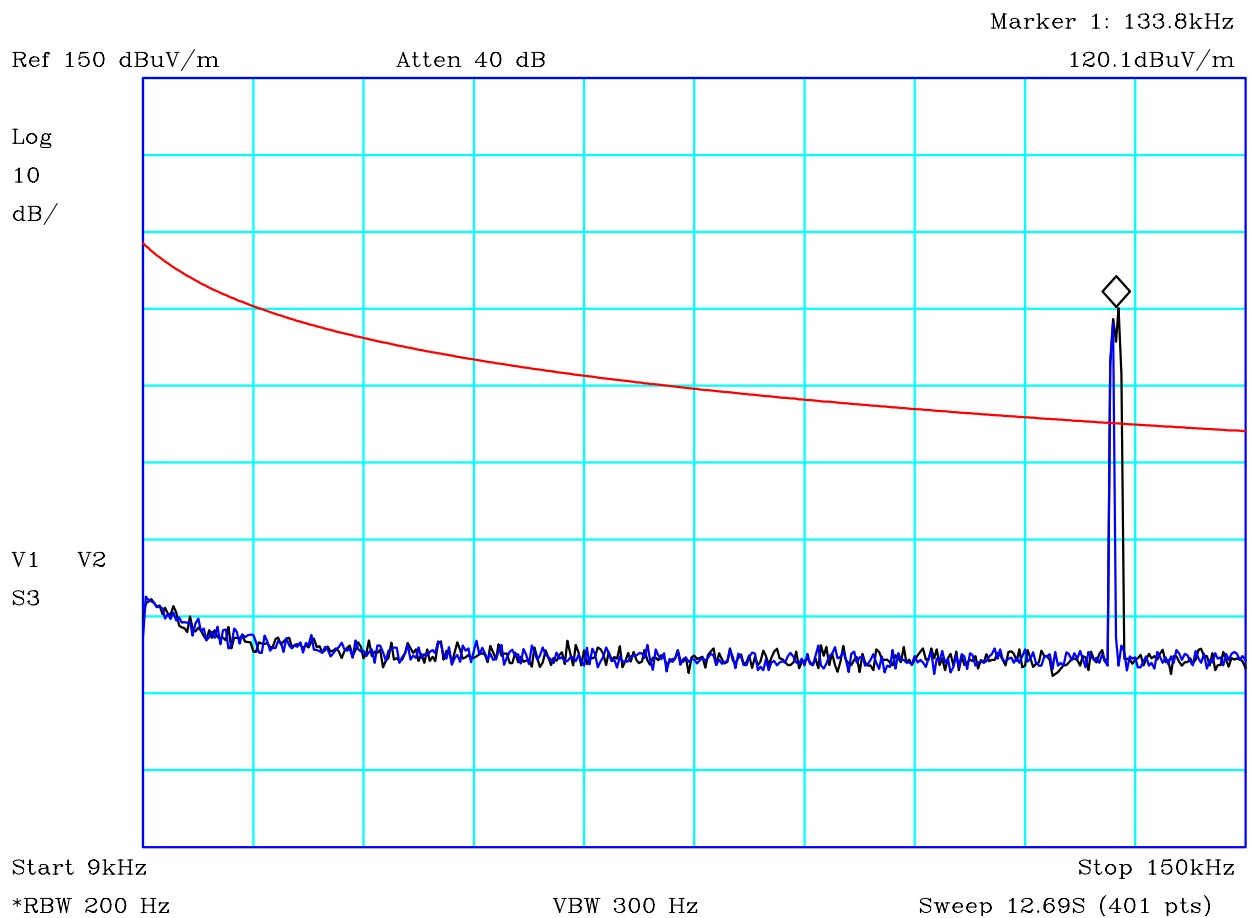
PLOT 9 Radiated Emissions - LF - 120V - 1.705MHz to 30MHz

| | | | |
|--------------|---------------------------|-----------|------------|
| Company: | Sureflap ltd | Product: | DualScan |
| Date: | 22/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(RED) | FCC_subpartC_@3m_40dB/dec | Limit2: | |
| Limit3: | | Limit4: | |

Black: face onl Blue: perpendicular
126kHz 120V.
The red limit is the FCC part 15.209 limit extrapolated to 3m using a default 40dB per decade. In practice, an extrapolation of closer to 60dB per decade could be expected which would significantly increase the margins.

| | | | | | |
|-----------|---------|--------------|----------|---------------------|----|
| Facility: | Anech_2 | Height | 1m | Mode: | 1 |
| Distance | 3m | Polarisation | | Modification State: | 0 |
| Angle | 0-360 | File: | H362252C | Analyser: | R8 |

| | | | |
|---|-------------------------|-----------------------|-----------------------|
|  | Report No: R3261 | FCC ID: XO9-DSCF-1001 | |
| | Issue No: 2 | IC: 8906A-DSCF1001 | |
| Test No: T5083 | Test Report | | Page: 28 of 46 |



CF1:A9_HI_V_130117 CF2:CBL059_CBL018_CBL065_CBL060_100806


PLOT 10 Radiated Emissions - HF - 120V - 9kHz to 150kHz

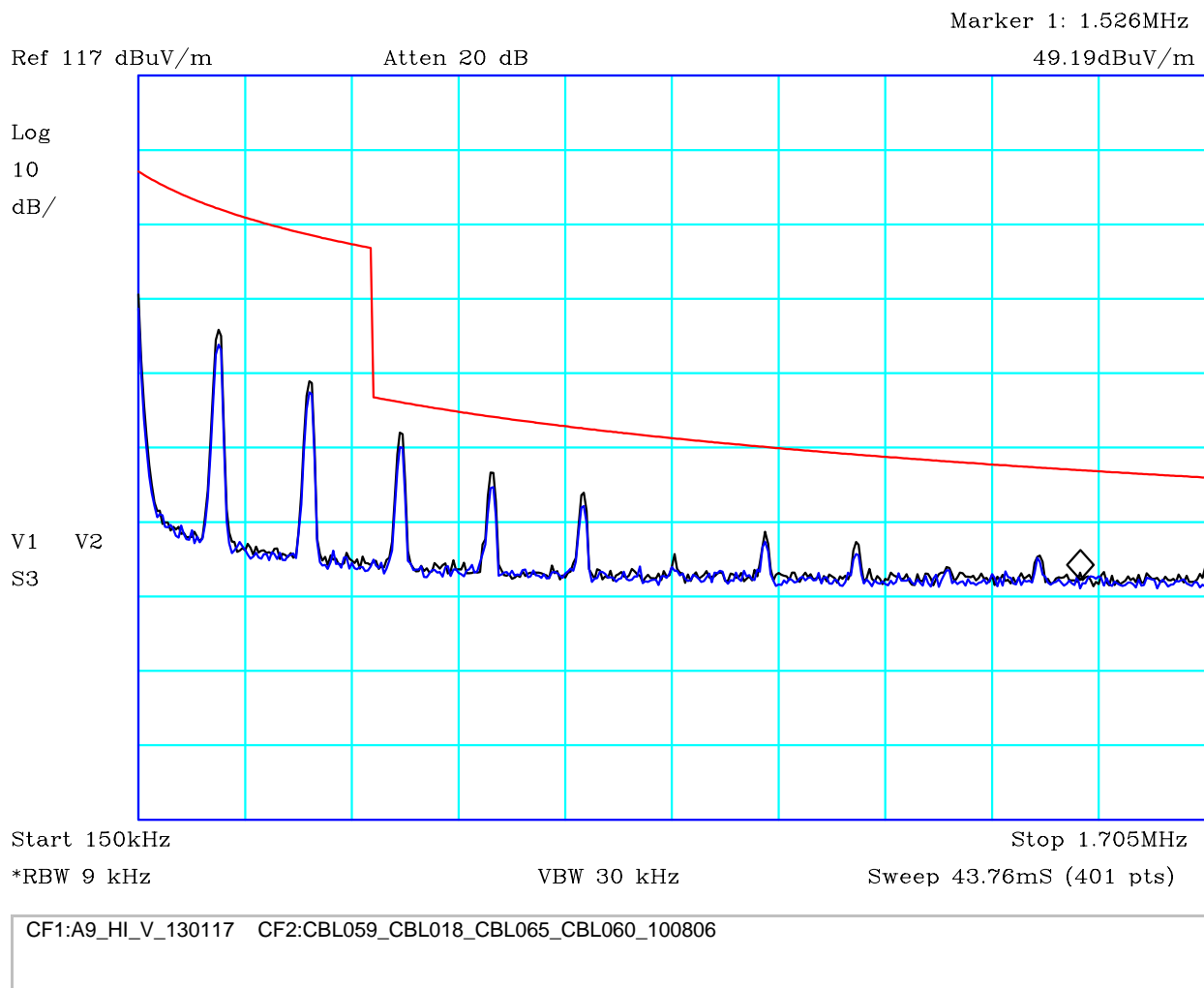
| | | | |
|--------------|---------------------------|-----------|------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 22/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(RED) | FCC_subpartC_@3m_40dB/dec | Limit2: | |
| Limit3: | | Limit4: | |

Black: face onl Blue: perpendicular
133kHz 120V.

Measured at 45deg steps
The red limit is the FCC part 15.209 limit extrapolated to 3m using a default 40dB per decade. In practice, an extrapolation of closer to 60dB per decade could be expected which would significantly increase the margins.


| | | | | | |
|-----------|---------|--------------|----------|---------------------|----|
| Facility: | Anech_2 | Height | 1m, | Mode: | 1 |
| Distance | 3m | Polarisation | | Modification State: | 0 |
| Angle | 0-360 | File: | H3622505 | Analyser: | R8 |

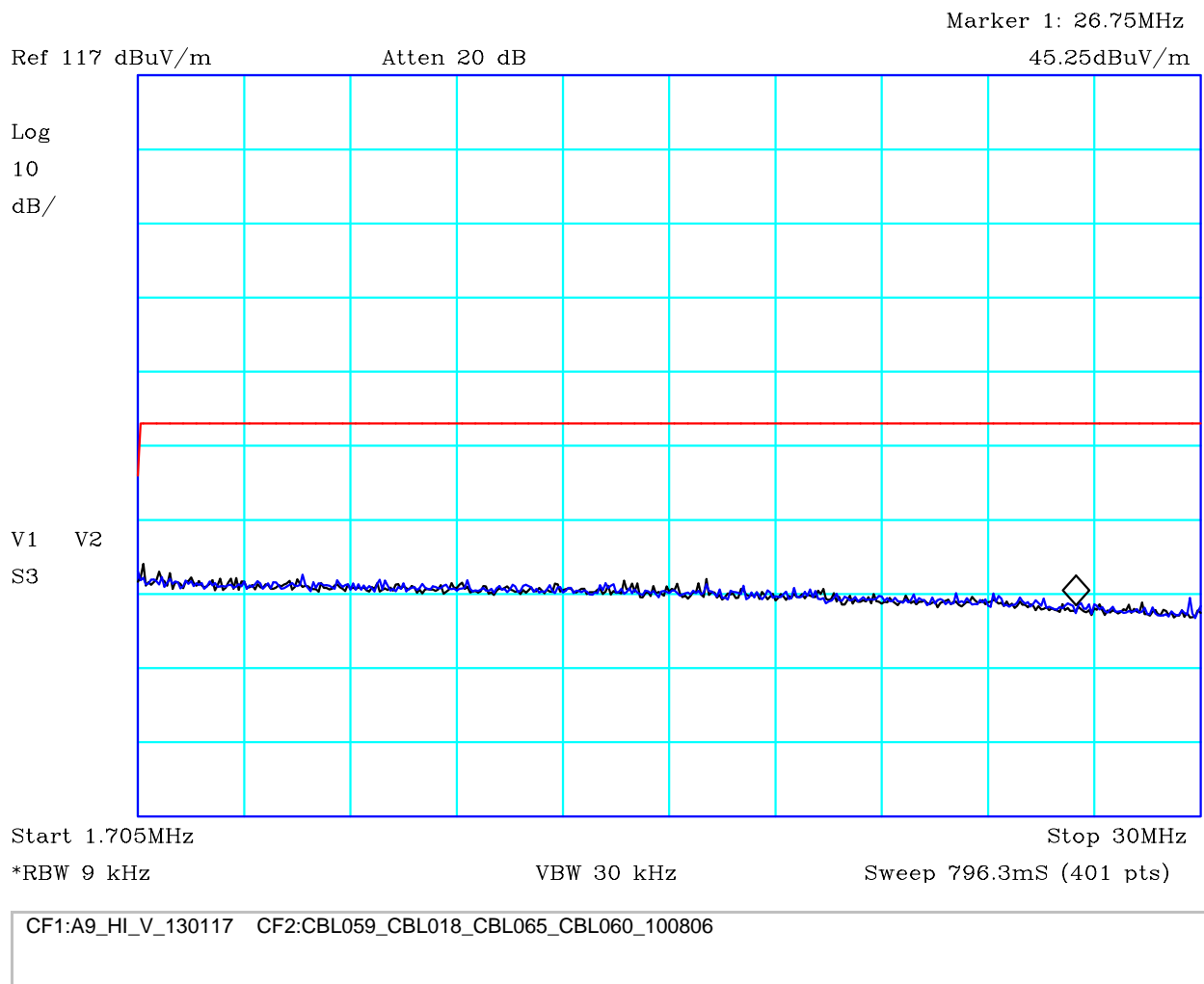
| | | | |
|---|---|---|----------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 29 of 46 |



PLOT 11 Radiated Emissions - HF - 120V - 150kHz to 1.705MHz

| | | | |
|--|---------------------------|---------------------|------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 22/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(RED) | FCC_subpartC_@3m_40dB/dec | Limit2: | |
| Limit3: | | Limit4: | |
| Black: face onl Blue: perpendicular 133kHz 120V. The red limit is the FCC part 15.209 limit extrapolated to 3m using a default 40dB per decade. In practice, an extrapolation of closer to 60dB per decade could be expected which would significantly increase the margins. | | | |
| Facility: | Anech_2 | Height | 1m |
| Distance | 3m | Polarisation | |
| Angle | 0-360 | File: | H3622512 |
| | | Mode: | 1 |
| | | Modification State: | 0 |
| | | Analysar: | R8 |

| | | | |
|---|-------------------------|-----------------------|-----------------------|
|  | Report No: R3261 | FCC ID: XO9-DSCF-1001 | |
| | Issue No: 2 | IC: 8906A-DSCF1001 | |
| Test No: T5083 | Test Report | | Page: 30 of 46 |




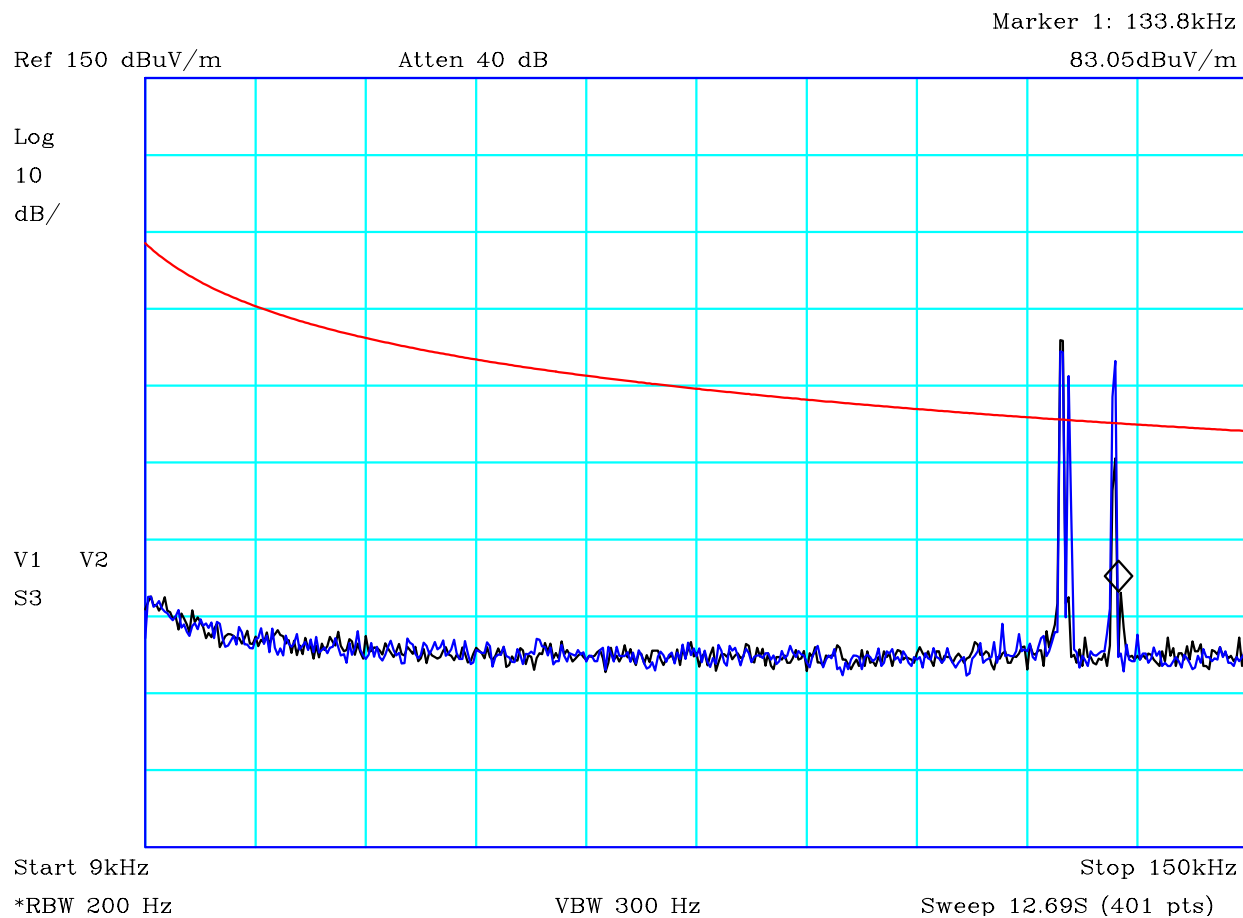
PLOT 12 Radiated Emissions - HF - 120V - 1.705MHz to 30MHz

| | | | |
|--------------|---------------------------|-----------|------------|
| Company: | Sureflap ltd | Product: | DualScan |
| Date: | 22/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(RED) | FCC_subpartC_@3m_40dB/dec | Limit2: | |
| Limit3: | | Limit4: | |

Black: face onl Blue: perpendicular
Sample A: 133kHz 120V.
The red limit is the FCC part 15.209 limit extrapolated to 3m using a default 40dB per decade. In practice, an extrapolation of closer to 60dB per decade could be expected which would significantly increase the margins.

| | | | | | |
|-----------|---------|--------------|----------|---------------------|----|
| Facility: | Anech_2 | Height | 1m | Mode: | 1 |
| Distance | 3m | Polarisation | | Modification State: | 0 |
| Angle | 0-360 | File: | H362251B | Analyser: | R8 |


| | | | |
|---|---|---|-----------------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 31 of 46 |

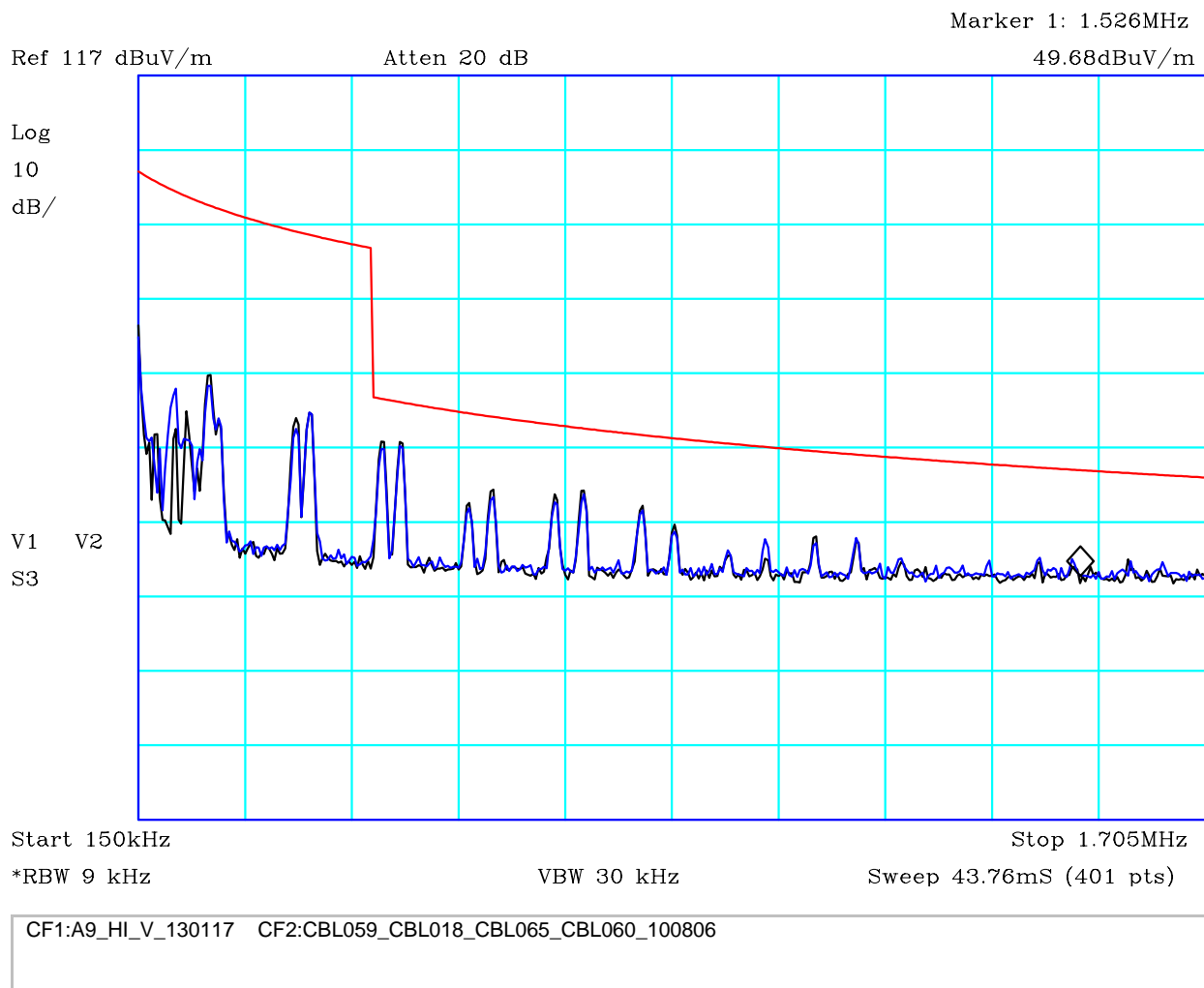


CF1:A9_HI_V_130117 CF2:CBL059_CBL018_CBL065_CBL060_100806

PLOT 13 Radiated Emissions - Cycling all modes - 9kHz to 150kHz


| | | | |
|--|---------------------------|---------------------|------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 25/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(RED) | FCC_subpartC_@3m_40dB/dec | Limit2: | |
| Limit3: | | Limit4: | |
| Black: face on Blue: perpendicular Cycling all modes The red limit is the FCC part 15.209 limit extrapolated to 3m using a default 40dB per decade. In practice, an extrapolation of closer to 60dB per decade could be expected which would significantly increase the margins. | | | |
| Facility: | Anech_2 | Height | 1m |
| Distance | 3m | Polarisation | |
| Angle | 0-360 | File: | H36255DC |
| | | Mode: | 2 |
| | | Modification State: | 0 |
| | | Analysar: | R8 |

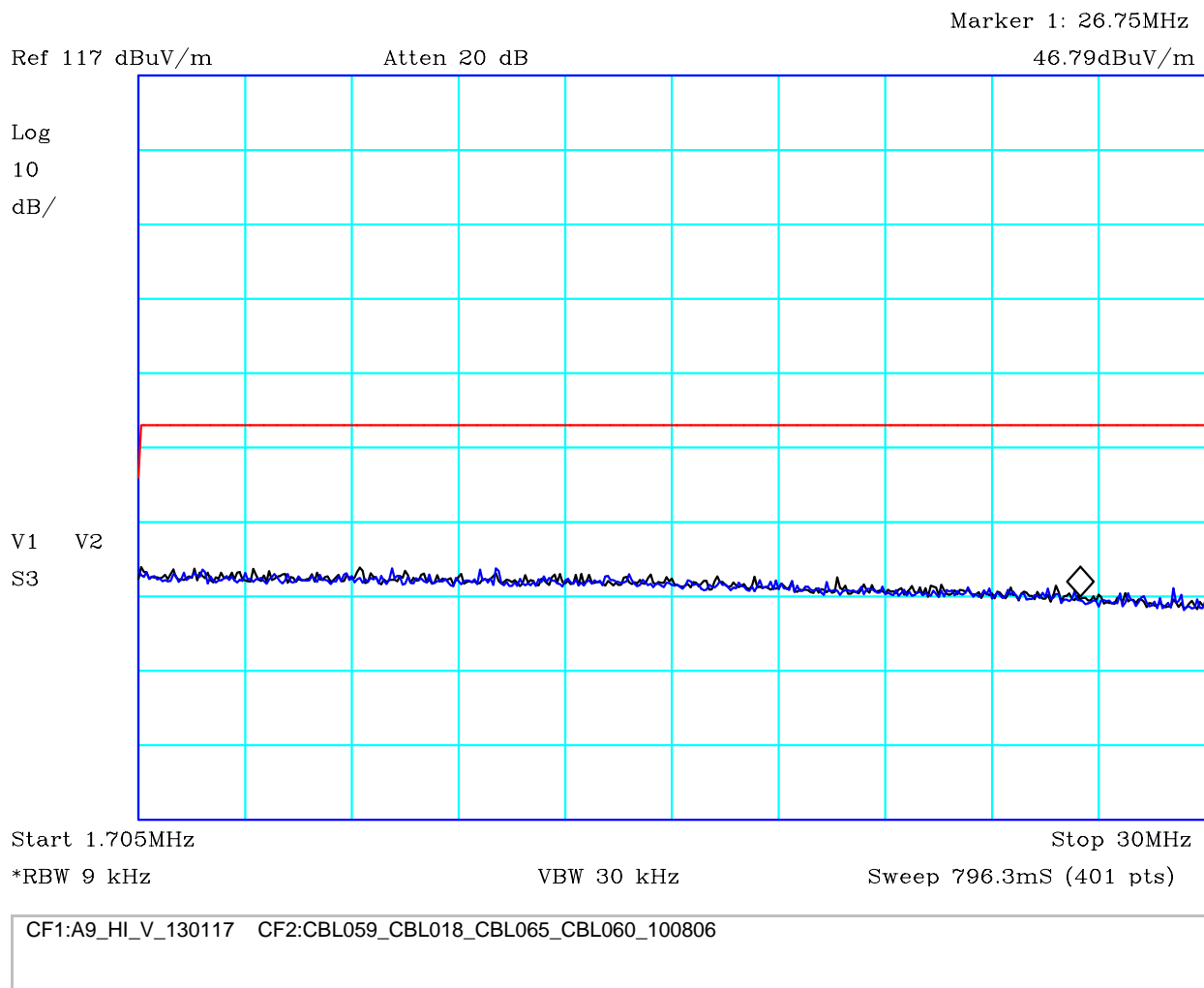
| | | | |
|---|---|---|----------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 32 of 46 |



PLOT 14 Radiated Emissions - Cycling all modes - 150kHz to 1.705MHz


| | | | |
|--|---------------------------|---------------------|------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 25/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(RED) | FCC_subpartC_@3m_40dB/dec | Limit2: | |
| Limit3: | | Limit4: | |
| Black: face on Blue: perpendicular Cycling all modes The red limit is the FCC part 15.209 limit extrapolated to 3m using a default 40dB per decade. In practice, an extrapolation of closer to 60dB per decade could be expected which would significantly increase the margins. | | | |
| Facility: | Anech_2 | Height | 1m |
| Distance | 3m | Polarisation | |
| Angle | 0-360 | File: | H36255E9 |
| | | Mode: | 2 |
| | | Modification State: | 0 |
| | | Analysers: | R8 |

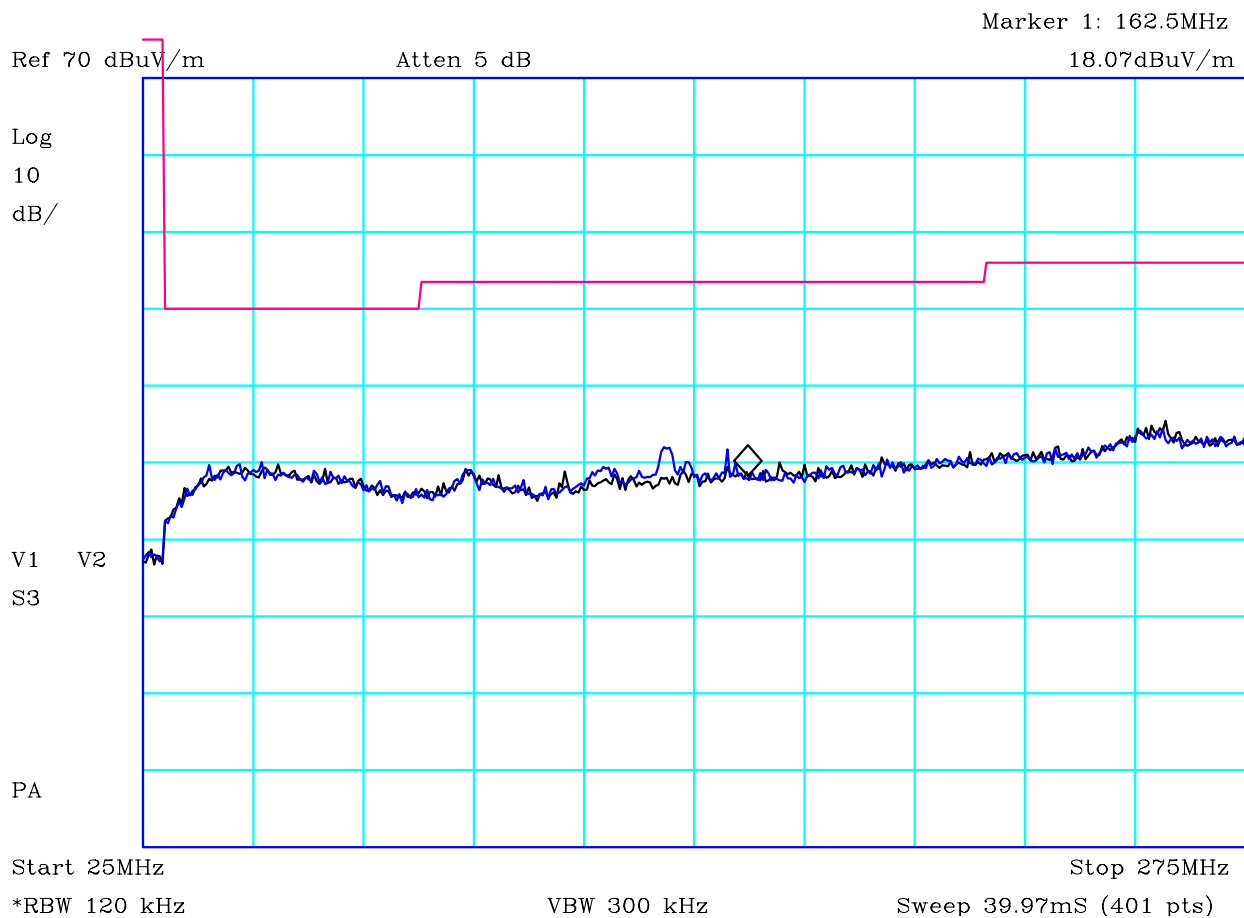
| | | | |
|---|---|---|-----------------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 33 of 46 |



PLOT 15 Radiated Emissions - Cycling all modes - 1.705MHz to 30MHz

| | | | |
|--|---------------------------|---------------------|------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 25/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(RED) | FCC_subpartC_@3m_40dB/dec | Limit2: | |
| Limit3: | | Limit4: | |
| Black: face on Blue: perpendicular Cycling all modes The red limit is the FCC part 15.209 limit extrapolated to 3m using a default 40dB per decade. In practice, an extrapolation of closer to 60dB per decade could be expected which would significantly increase the margins. | | | |
| Facility: | Anech_2 | Height | 1m |
| Distance | 3m | Polarisation | |
| Angle | 0-360 | File: | H36255EF |
| | | Mode: | 2 |
| | | Modification State: | 0 |
| | | Analysar: | R8 |


| | | | |
|---|---|---|-----------------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 34 of 46 |

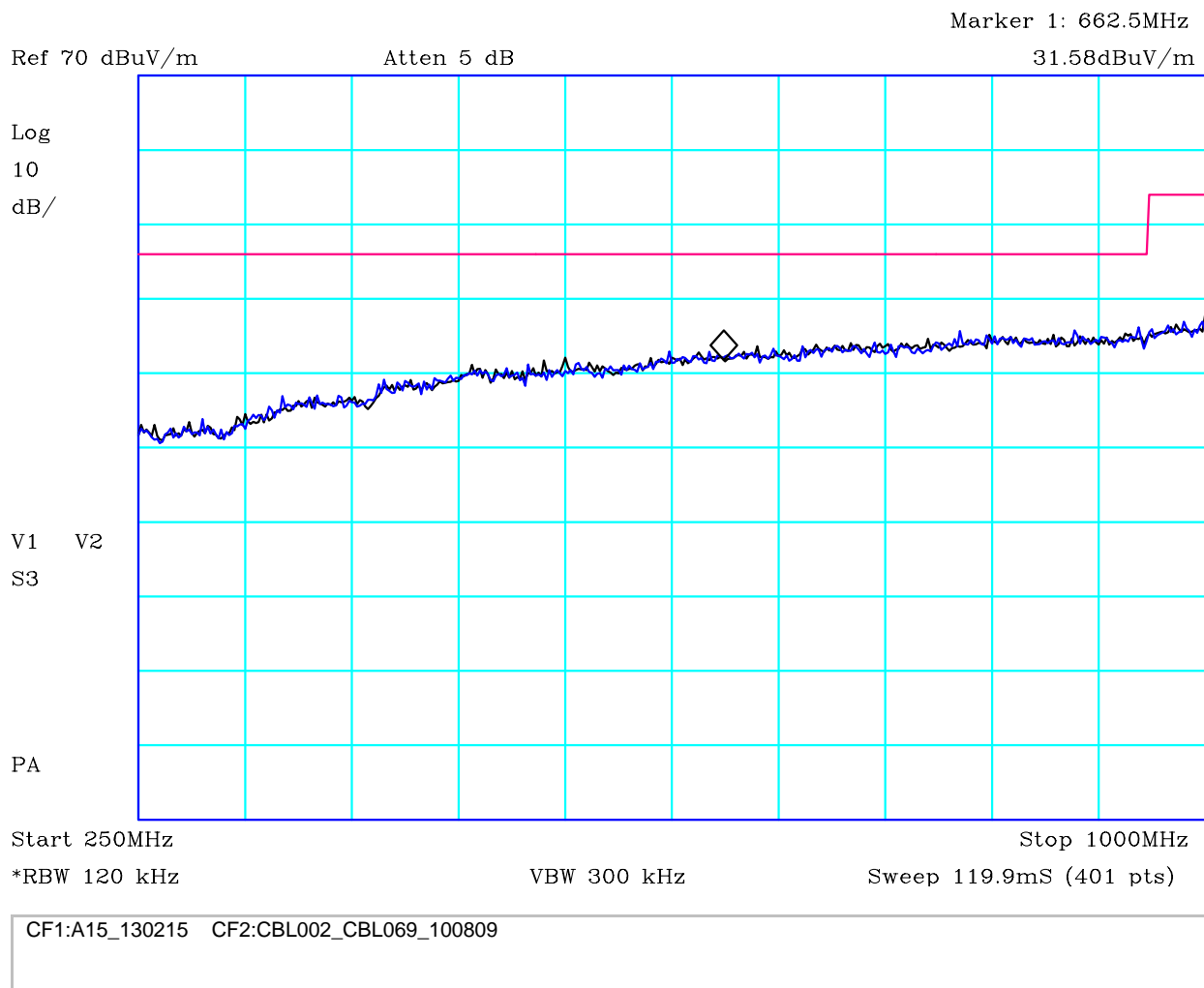


CF1:A15_130215 CF2:CBL002_CBL069_100809

PLOT 16 Radiated Emissions - LF - 80V - 25MHz to 275MHz


| | | | |
|---|--------------|---------------------|--------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 24/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(VIO) | FCC(B)@3m | Limit2: | |
| Limit3: | | Limit4: | |
| Black: vertical Blue: horizontal 126kHz 80V. | | | |
| Facility: | Anech_1 | Height | 1.5m |
| Distance | 3m | Polarisation | |
| Angle | 0-360 | File: | H362547F.txt |
| | | Mode: | 1 |
| | | Modification State: | 0 |
| | | Analysers: | R8 |

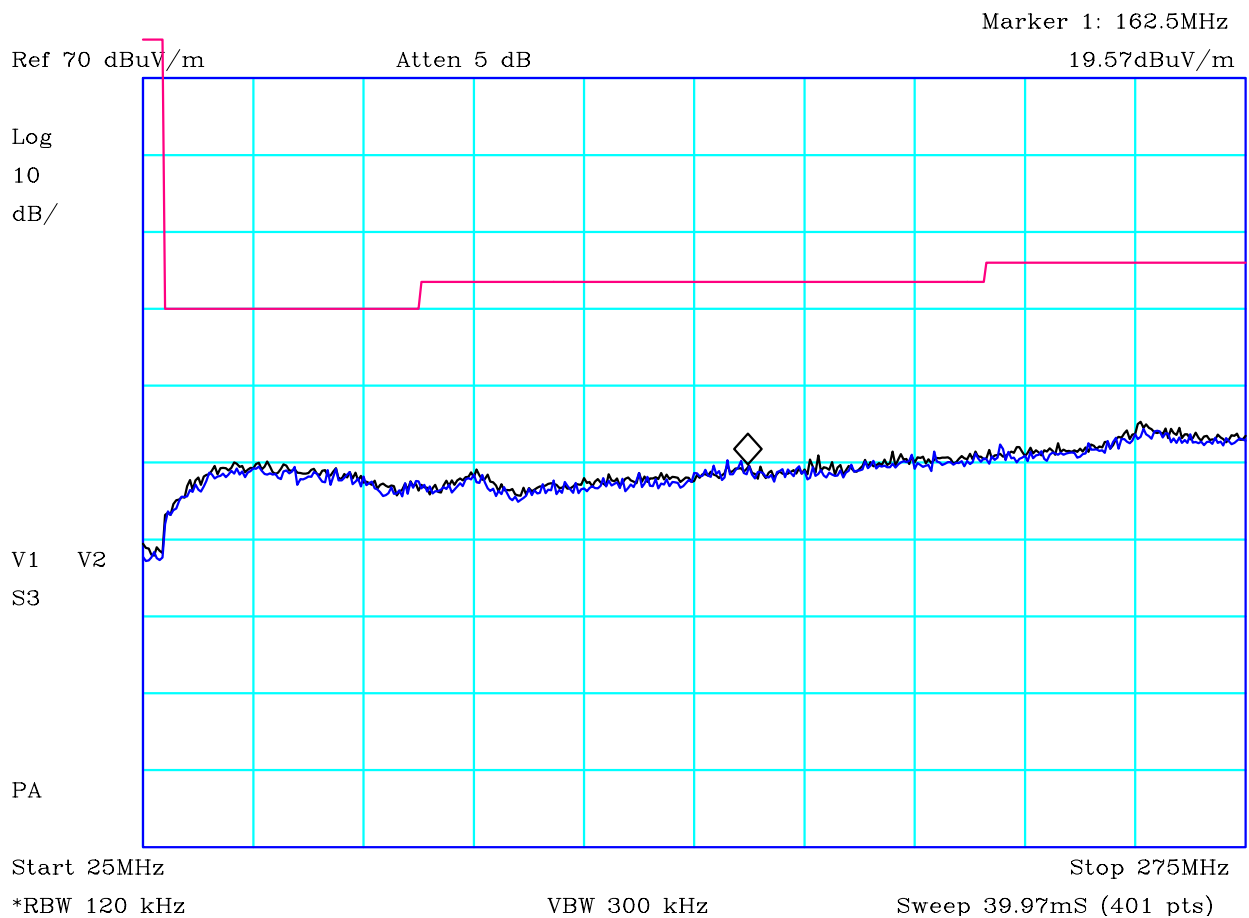
| | | | |
|---|---|---|-----------------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 35 of 46 |



PLOT 17 Radiated Emissions - LF - 80V - 250MHz to 1GHz

| | | | |
|---|--------------|---------------------|--------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 24/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(VIO) | FCC(B)@3m | Limit2: | |
| Limit3: | | Limit4: | |
| Black: vertical Blue: horizontal 126kHz 80V. | | | |
| Facility: | Anech_1 | Height | 1.5m |
| Distance | 3m | Polarisation | |
| Angle | 0-360 | File: | H3625483.txt |
| | | Mode: | 1 |
| | | Modification State: | 0 |
| | | Analysers: | R8 |

| | | | |
|---|-------------------------|-----------------------|-----------------------|
|  | Report No: R3261 | FCC ID: XO9-DSCF-1001 | |
| | Issue No: 2 | IC: 8906A-DSCF1001 | |
| Test No: T5083 | Test Report | | Page: 36 of 46 |




CF1:A15_130215 CF2:CBL002_CBL069_100809

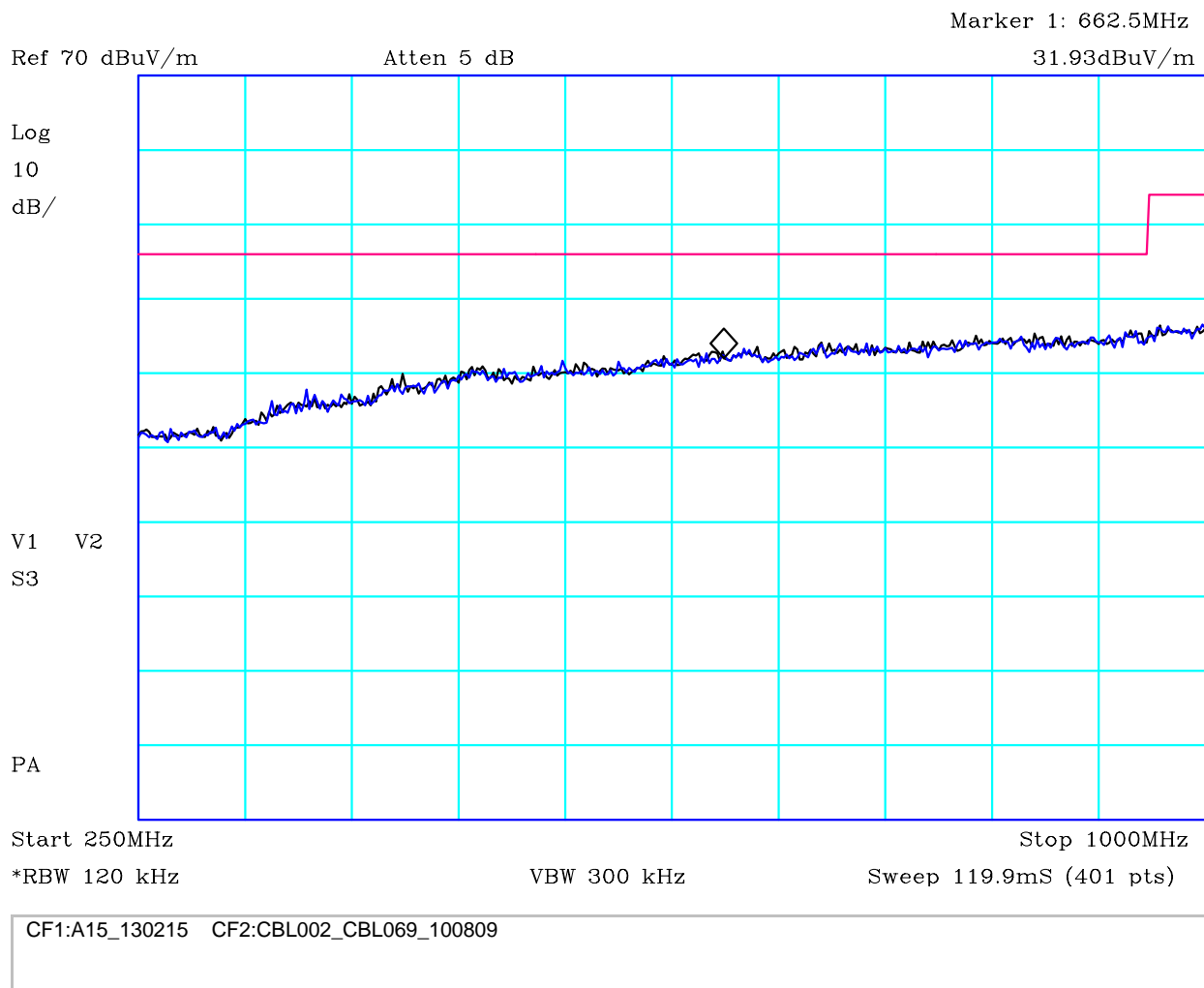
PLOT 18 Radiated Emissions - HF - 80V - 25MHz to 275MHz

| | | | |
|--------------|--------------|-----------|------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 24/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(VIO) | FCC(B)@3m | Limit2: | |
| Limit3: | | Limit4: | |

Black: vertical Blue: horizontal
133kHz 80V.


| | | | | | |
|-----------|---------|--------------|--------------|---------------------|----|
| Facility: | Anech_1 | Height | 1.5m | Mode: | 1 |
| Distance | 3m | Polarisation | | Modification State: | 0 |
| Angle | 0-360 | File: | H362547A.txt | Analyser: | R8 |

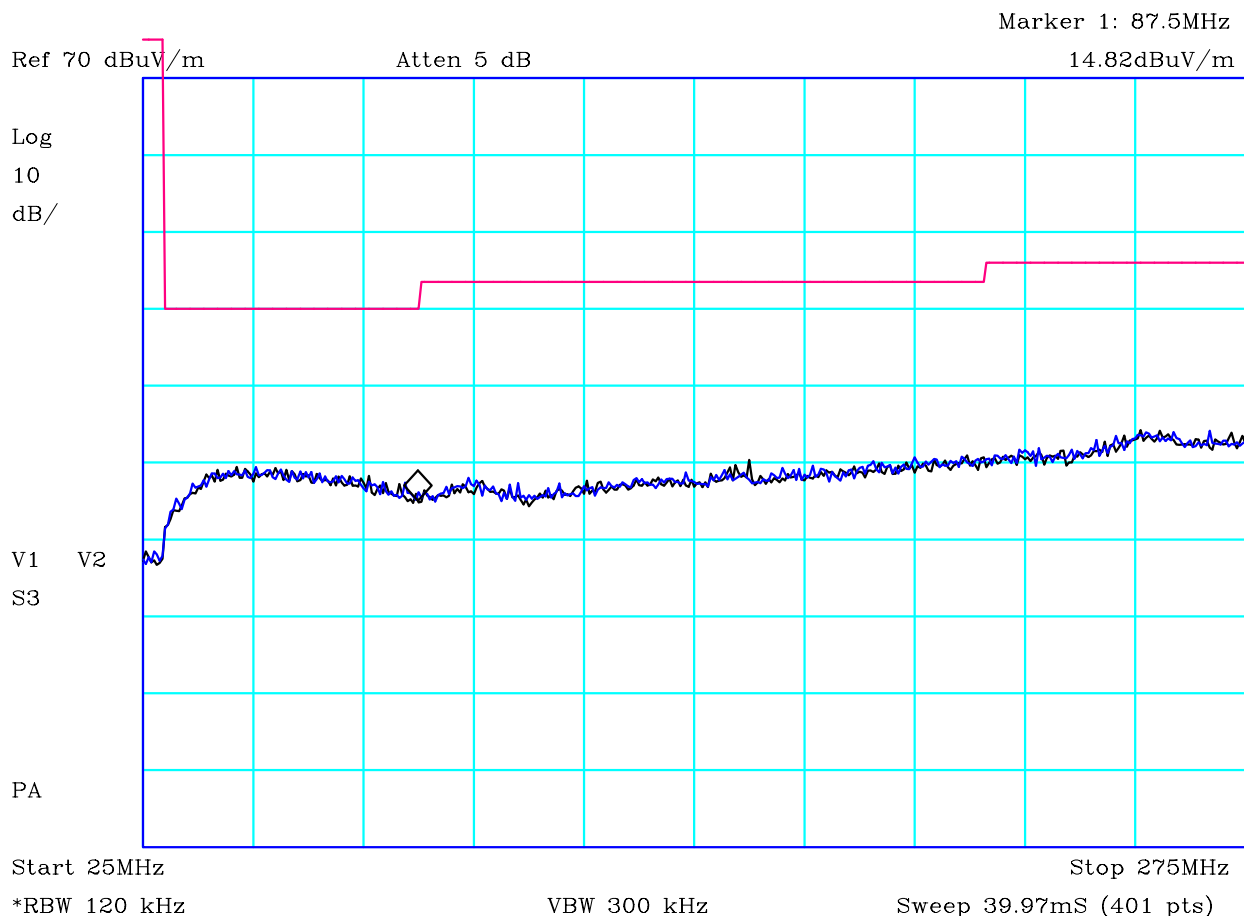
| | | | |
|---|---|---|-----------------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 37 of 46 |



PLOT 19 Radiated Emissions - HF - 80V - 250MHz to 1GHz

| | | | |
|---|--------------|---------------------|--------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 24/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(VIO) | FCC(B)@3m | Limit2: | |
| Limit3: | | Limit4: | |
| Black: vertical Blue: horizontal 133kHz 80V. | | | |
| Facility: | Anech_1 | Height | 1.5m |
| Distance | 3m | Polarisation | |
| Angle | 0-360 | File: | H362547E.txt |
| | | Mode: | 1 |
| | | Modification State: | 0 |
| | | Analyser: | R8 |


| | | | |
|---|---|---|-----------------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 38 of 46 |

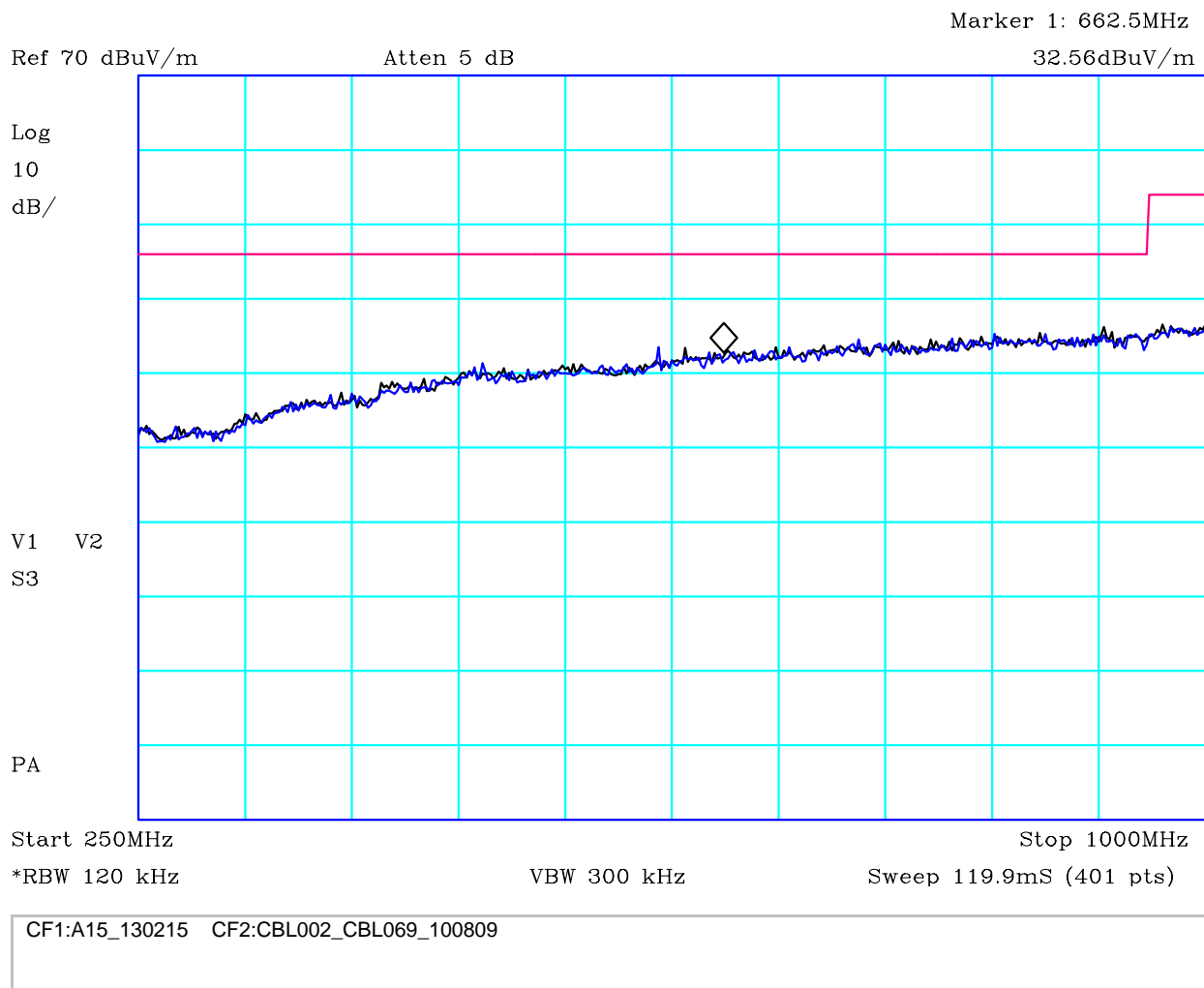


CF1:A15_130215 CF2:CBL002_CBL069_100809

PLOT 20 Radiated Emissions - LF - 120V - 25MHz to 275MHz


| | | | |
|--|--------------|---------------------|--------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 24/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(VIO) | FCC(B)@3m | Limit2: | |
| Limit3: | | Limit4: | |
| Black: vertical Blue: horizontal 126kHz 120V. | | | |
| Facility: | Anech_1 | Height | 1.5m |
| Distance | 3m | Polarisation | |
| Angle | 0-360 | File: | H3625478.txt |
| | | Mode: | 1 |
| | | Modification State: | 0 |
| | | Analyser: | R8 |

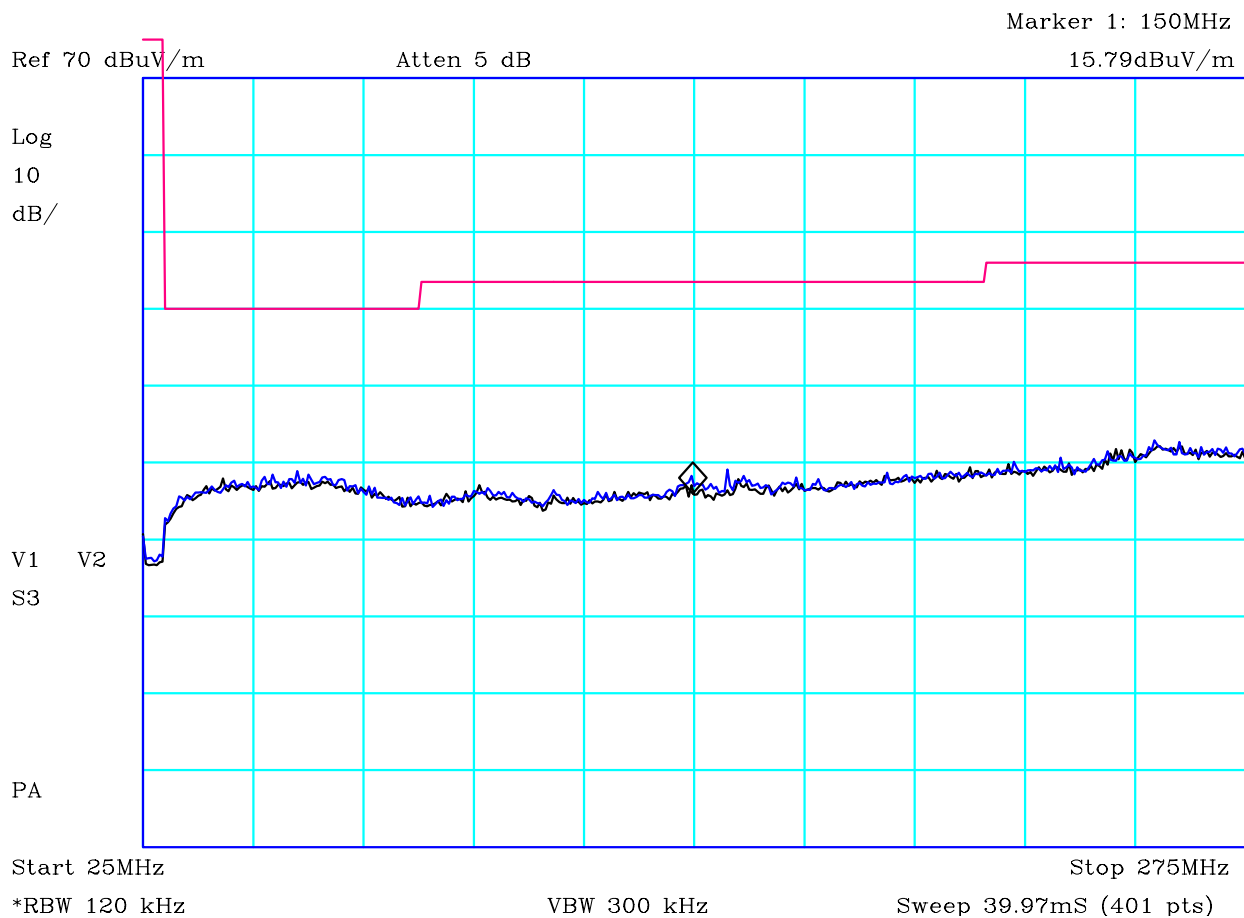
| | | | |
|---|---|---|----------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 39 of 46 |



PLOT 21 Radiated Emissions - LF - 120V - 250MHz to 1GHz

| | | | |
|--|--------------|---------------------|--------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 24/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(VIO) | FCC(B)@3m | Limit2: | |
| Limit3: | | Limit4: | |
| Black: vertical Blue: horizontal 126kHz 120V. | | | |
| Facility: | Anech_1 | Height | 1.5m |
| Distance | 3m | Polarisation | |
| Angle | 0-360 | File: | H3625479.txt |
| | | Mode: | 1 |
| | | Modification State: | 0 |
| | | Analysers: | R8 |


| | | | |
|---|---|---|-----------------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 40 of 46 |

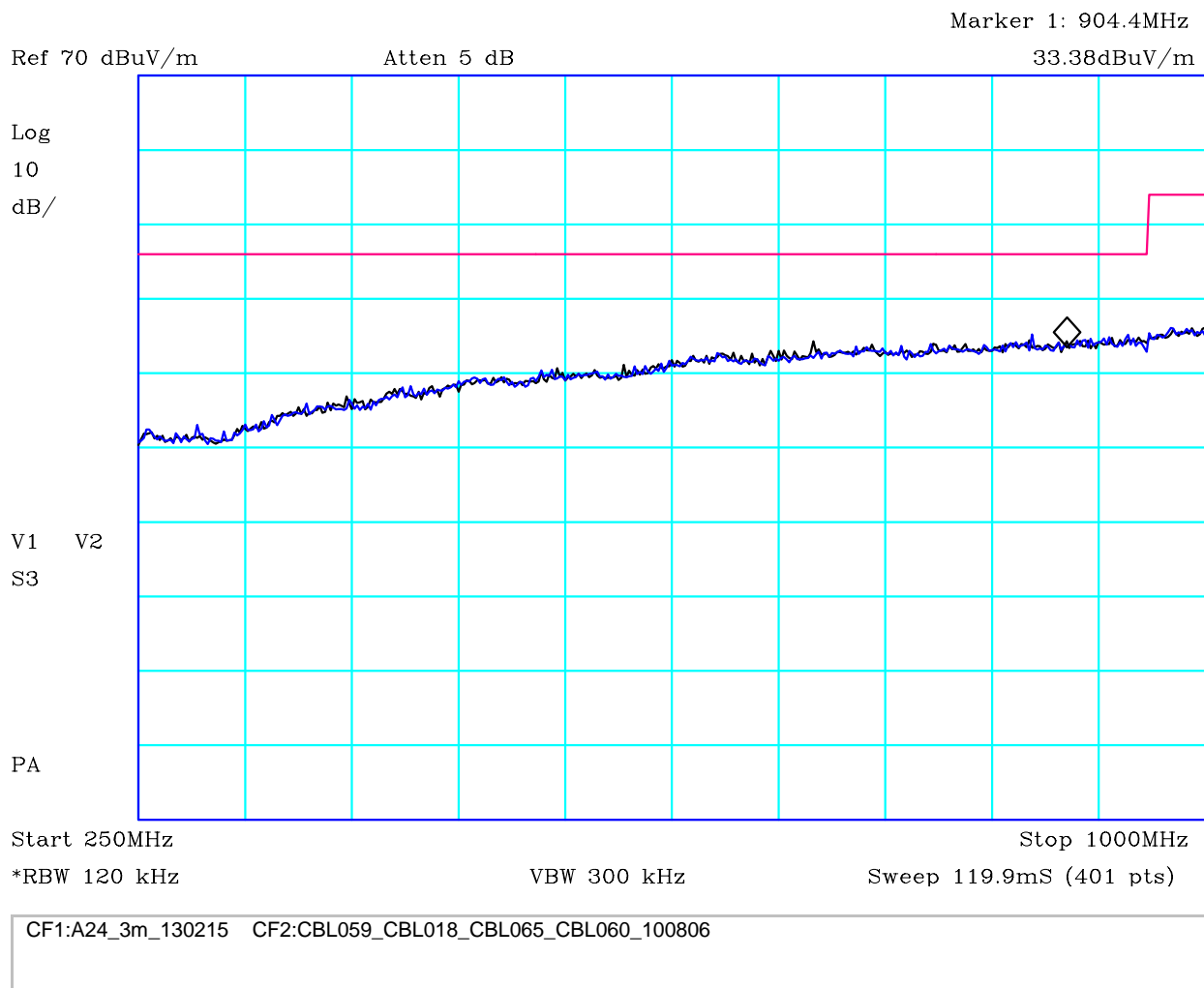


CF1:A24_3m_130215 CF2:CBL059_CBL018_CBL065_CBL060_100806

PLOT 22 Radiated Emissions - HF - 120V - 25MHz to 275MHz


| | | | |
|--|--------------|---------------------|------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 22/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(VIO) | FCC(B)@3m | Limit2: | |
| Limit3: | | Limit4: | |
| Black: vertical Blue: horizontal 133kHz 120V. | | | |
| Facility: | Anech_2 | Height | 1m,1.5m,2m |
| Distance | 3m | Polarisation | |
| Angle | 0-360 | File: | H36224CC |
| | | Mode: | 1 |
| | | Modification State: | 0 |
| | | Analysers: | R8 |

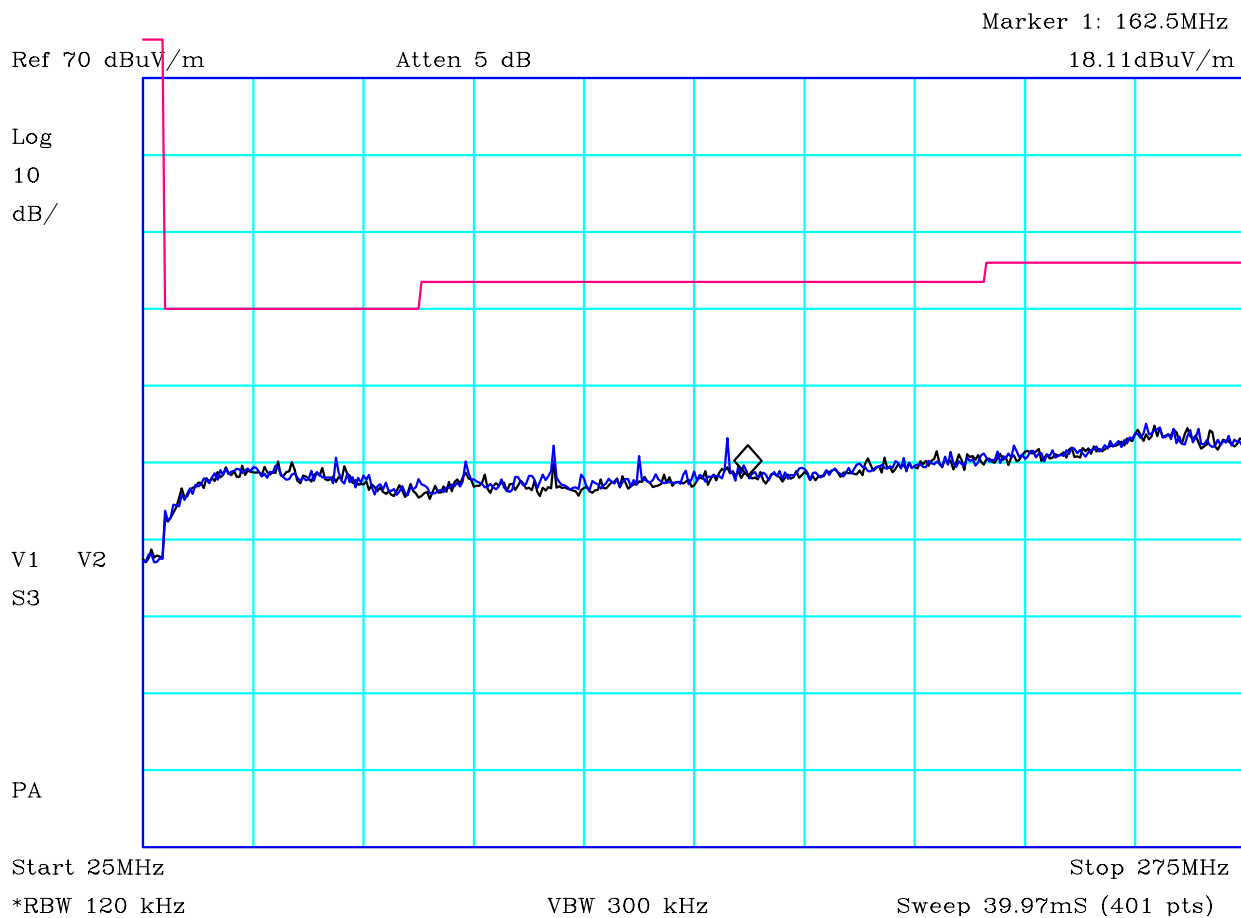
| | | | |
|---|---|---|-----------------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 41 of 46 |



PLOT 23 Radiated Emissions - HF - 120V - 250MHz to 1GHz

| | | | |
|--|--------------|---------------------|------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 22/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(VIO) | FCC(B)@3m | Limit2: | |
| Limit3: | | Limit4: | |
| Black: vertical Blue: horizontal 133kHz 120V. | | | |
| Facility: | Anech_2 | Height | 1m,1.5m,2m |
| Distance | 3m | Polarisation | |
| Angle | 0-360 | File: | H36224CA |
| | | Mode: | 1 |
| | | Modification State: | 0 |
| | | Analysers: | R8 |


| | | | |
|---|---|---|----------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 42 of 46 |

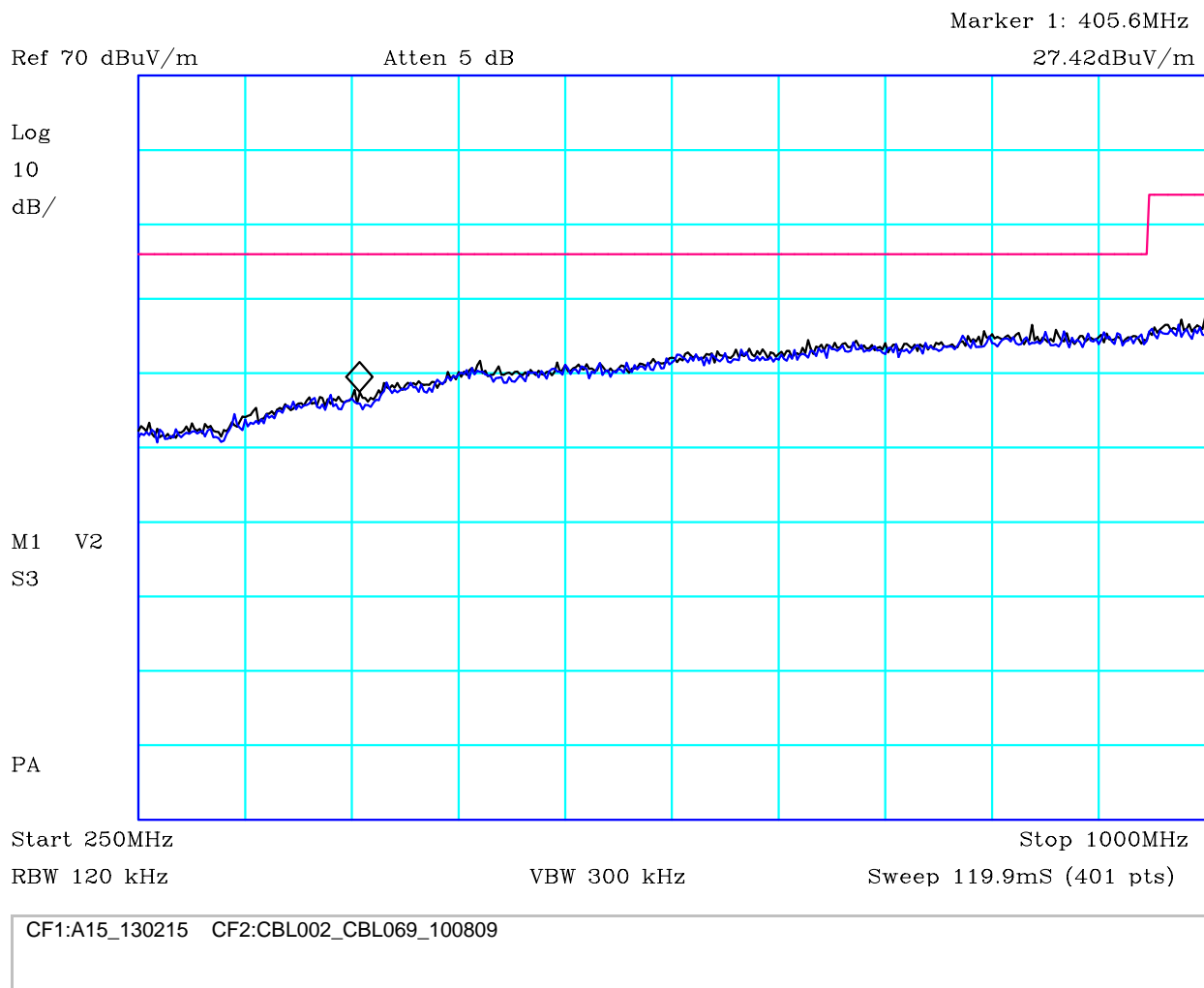


CF1:A15_130215 CF2:CBL002_CBL069_100809

PLOT 24 Radiated Emissions - Cycling all Tx Modes - 25MHz to 275MHz


| | | | |
|---|--------------|---------------------|--------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 24/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(VIO) | FCC(B)@3m | Limit2: | |
| Limit3: | | Limit4: | |
| Black: vertical Blue: horizontal Cycling all modes | | | |
| Facility: | Anech_1 | Height | 1.5m |
| Distance | 3m | Polarisation | |
| Angle | 0-360 | File: | H3625485.txt |
| | | Mode: | 2 |
| | | Modification State: | 0 |

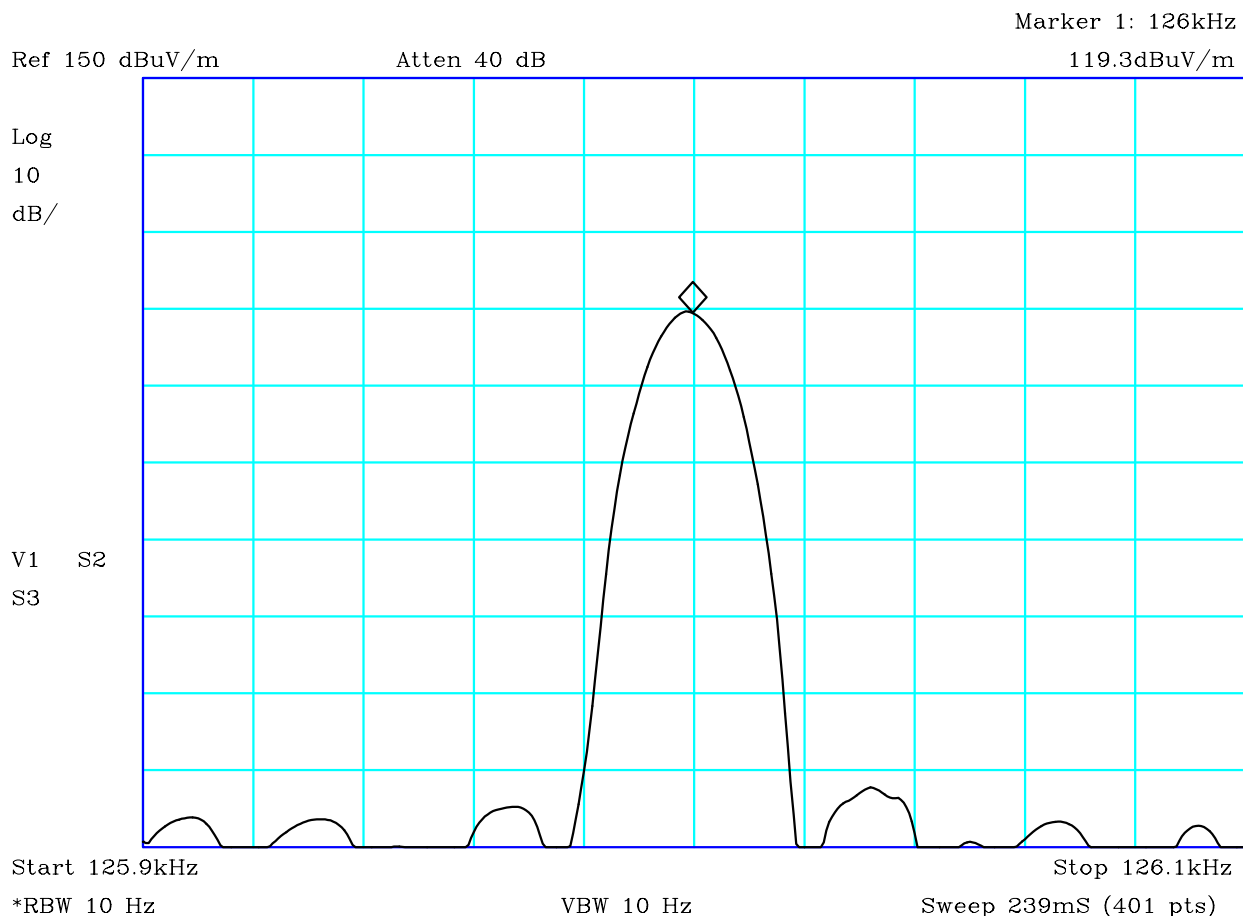
| | | | |
|---|---|---|-----------------------|
|  | Report No: R3261 Issue No: 2 | FCC ID: XO9-DSCF-1001 IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 43 of 46 |



PLOT 25 Radiated Emissions - Cycling all Tx Modes - 250MHz to 1GHz

| | | | |
|---|--------------|---------------------|--------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 24/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1:(VIO) | FCC(B)@3m | Limit2: | |
| Limit3: | | Limit4: | |
| Black: vertical Blue: horizontal Cycling all modes | | | |
| Facility: | Anech_1 | Height | 1.5m |
| Distance | 3m | Polarisation | |
| Angle | 0-360 | File: | H362548A.txt |
| | | Mode: | 2 |
| | | Modification State: | 0 |

| | | | |
|---|-------------------------|-----------------------|-----------------------|
|  | Report No: R3261 | FCC ID: XO9-DSCF-1001 | |
| | Issue No: 2 | IC: 8906A-DSCF1001 | |
| Test No: T5083 | Test Report | | Page: 44 of 46 |




CF1:A9_HI_V_130117 CF2:CBL002_CBL069_100809

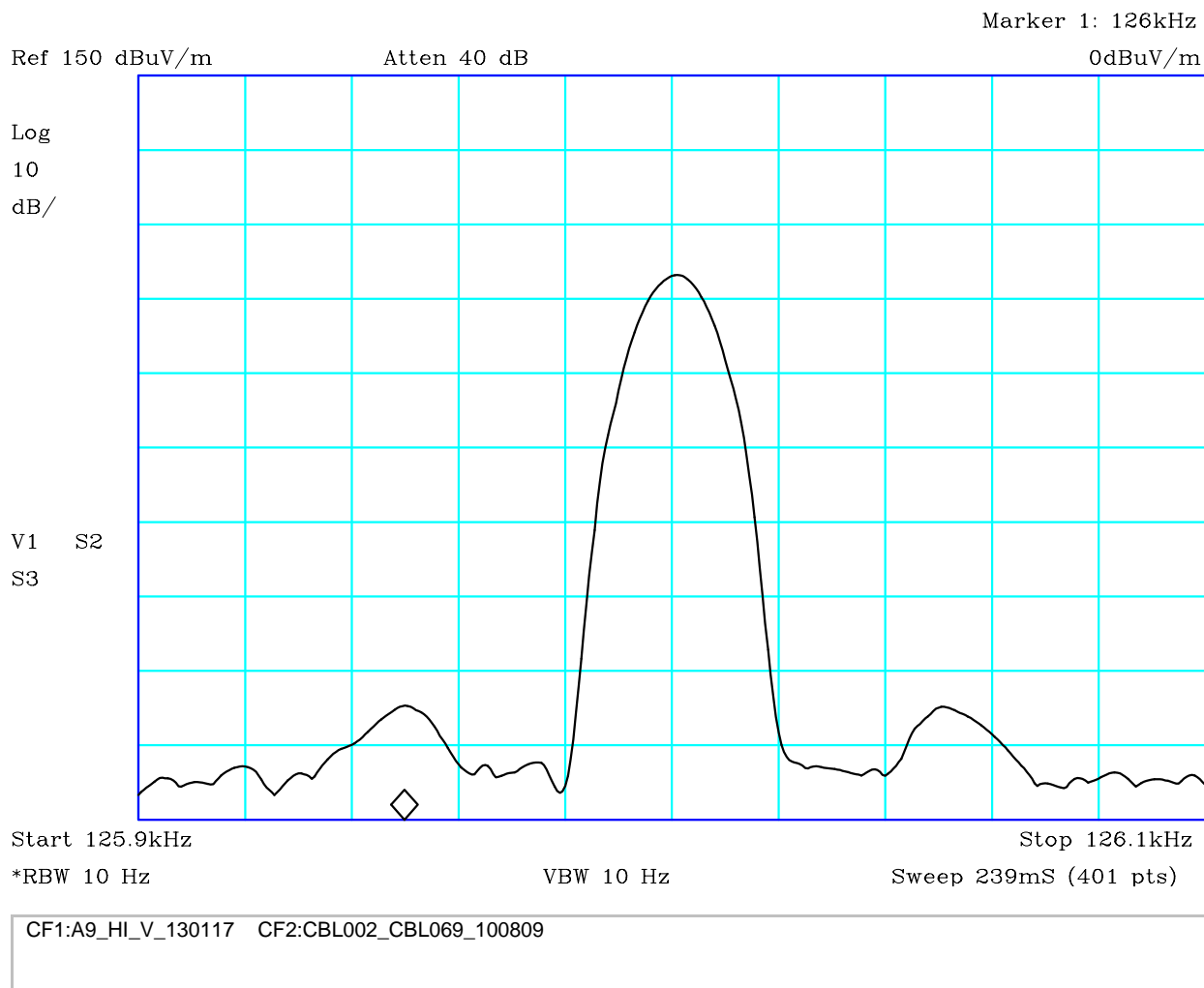
PLOT 26 Radiated Emissions - Bandwidth at 126kHz

| | | | |
|----------|--------------|-----------|------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 22/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1: | | Limit2: | |
| Limit3: | | Limit4: | |

126kHz 120V.
Bandwidth @-30dBc points = 29Hz
99% Occupied bandwidth = 25Hz

| | | | | | |
|-----------|---------|--------------|----------|---------------------|----|
| Facility: | Anech_2 | Height | 1m | Mode: | 1 |
| Distance | 3m | Polarisation | | Modification State: | 0 |
| Angle | 1 face | File: | H36257A2 | Analyser: | R8 |

| | | | |
|---|-------------------------|-----------------------|-----------------------|
|  | Report No: R3261 | FCC ID: XO9-DSCF-1001 | |
| | Issue No: 2 | IC: 8906A-DSCF1001 | |
| | Test No: T5083 | Test Report | Page: 45 of 46 |




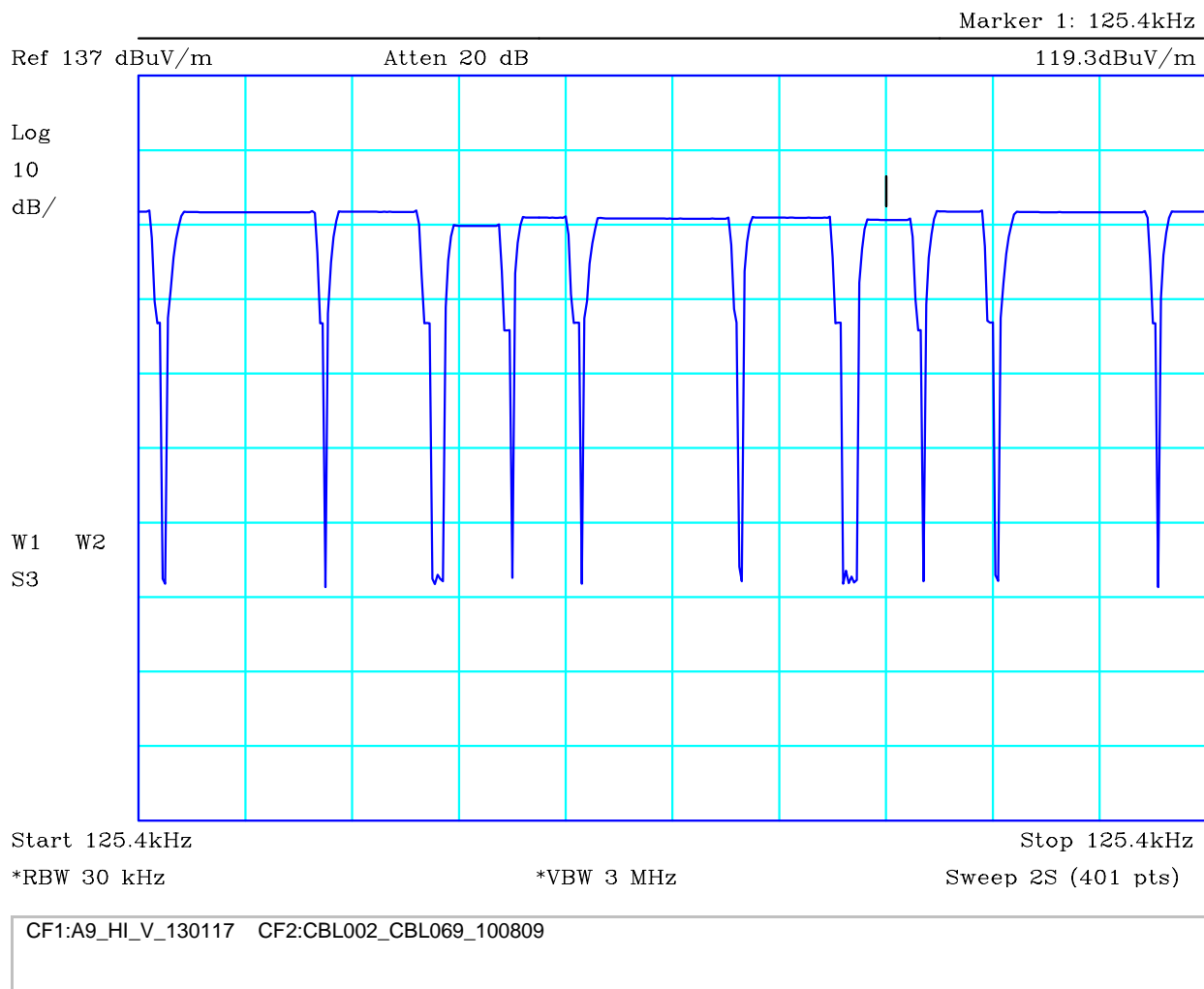
PLOT 27 Radiated Emissions - Bandwidth at 133kHz

| | | | |
|----------|--------------|-----------|------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 22/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1: | | Limit2: | |
| Limit3: | | Limit4: | |

133kHz 120V.
Bandwidth @-30dBc points = 28Hz
99% Occupied bandwidth = 26Hz

| | | | | | |
|-----------|---------|--------------|----------|---------------------|----|
| Facility: | Anech_2 | Height | 1m | Mode: | 1 |
| Distance | 3m | Polarisation | | Modification State: | 0 |
| Angle | 1 face | File: | H3625796 | Analyser: | R8 |

| | | | |
|---|-------------------------|-----------------------|-----------------------|
|  | Report No: R3261 | FCC ID: XO9-DSCF-1001 | |
| | Issue No: 2 | IC: 8906A-DSCF1001 | |
| Test No: T5083 | Test Report | | Page: 46 of 46 |



PLOT 28 Radiated Emissions - Timing

| | | | |
|-----------|--------------|---------------------|------------|
| Company: | Sureflap Ltd | Product: | DualScan |
| Date: | 22/07/2013 | Test Eng: | Dave Smith |
| Method: | ANSI C63.4 | Method: | |
| Limit1: | | Limit2: | |
| Limit3: | | Limit4: | |
| Timing | | | |
| Facility: | Anech_2 | Height | 1m |
| Distance | 3m | Polarisation | |
| Angle | 1 face | File: | H36257ED |
| | | Mode: | 2 |
| | | Modification State: | 0 |
| | | Analysers: | R8 |