FCC 47CFR part 15C
Test Report
For
epop 55f

Reference Standard: FCC 47CFR part 15C
Manufacturer: ZBD Displays Ltd
For type of equipment and serial number, refer to section 3
Report Number: 09-5152/3/12
Report Produced by: -

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Copy No. pdf

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Certificate of Test 5152/3

The unit noted below has been tested by **R.N. Electronics Limited** and, where appropriate, conforms to the relevant subpart of FCC 47CFR Part 15. This is a certificate of test only and should not be confused with an equipment authorisation. Other standards may also apply.

Equipment:	epop 55f
Model Number:	-
Proposed FCC ID:	Not Stated
Unique Serial Number:	DD00000472B
Manufacturer:	ZBD Displays Ltd Building 3 Kingswood Kings Ride Ascot Berkshire SL5 8AD
Customer Purchase Order Number:	6789
Full measurement results are detailed in Report Number:	09-5152/3/12
Test Standards:	FCC 47CFR Part 15C effective date October 1st 2011, Class DXT Intentional Radiator

NOTE:
Certain tests were not performed based upon manufacturer's declarations. Certain other requirements are subject to manufacturer declaration only and have not been tested/verified. For details refer to section 3 of this report.

DEVIATIONS:
Deviations from the standards have been applied. For details refer to section 4.2 of this report.

This certificate relates only to the unit tested as identified by a unique serial number and in the condition 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. Whilst every effort is made to assure quality of testing, type tests are not exhaustive and although no non-conformances may be found, this doesn't exclude the possibility of unit not meeting the intentions of the standard or the requirements of the Federal Regulations, particularly under different conditions to those during testing. Any compliance statements are made reliant on (a) the application of the product and use of the assigned band being acceptable to the FCC and (b) the modes of operation as instructed to us by the Customer based on their specific knowledge of the application and functionality of the EUT. Statements of compliance, where measurements were made, do not include the measurement uncertainty. The measurement uncertainty, where stated, is the expanded uncertainty based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

Date of Test: 18th - 20th September 2012

Test Engineer: Lee Chandler
Digitally signed by Lee Chandler
DN: CN = Lee Chandler, C = US, O = RN Electronics Limited
Date: 2012.10.26 15:27:45 +01'00'

Approved By:
Managing Director: Roger Ray

Customer Representative:

File name ZBD.5152-3.DOC
The contents of this report, apart from the referenced ANSI C63.4-2003, are beyond the scope of UKAS Testing Laboratory No. 2360 accreditation.

1. Contents

2. Summary of test results

The epop 55f - was tested to the following standards: -

FCC 47CFR Part 15.249 (effective date October 1st, 2011); Class DXT Intentional Radiator

Any compliance statements are made reliant on the modes of operation as instructed to us by the Manufacturer based on their specific knowledge of the application and functionality of the equipment tested. Whilst every effort is made to assure quality of testing, type tests are not exhaustive and although no non-conformances may be found, this doesn't exclude the possibility of equipment not meeting the intentions of the standard, particularly under different conditions to those during testing.

Title	Reference	Results
1. Conducted emissions	ANSI C63.10 §6.2.	NOT APPLICABLE[1]
2. Intentional radiator field strength	ANSI C63.10 §6.10.	PASSED
3. Radiated emissions	ANSI C63.10 §6.4 – 6.6.	PASSED
4. Frequency stability	ANSI C63.10 §6.8.	NOT APPLICABLE[2]
5. Occupied bandwidth and band edge	ANSI C63.10 §6.9.	PASSED
6. Duty cycle	ANSI C63.10 §7.5.	NOT APPLICABLE[3]

1. EUT does not operate from the AC power lines nor contain provisions for operation while connected to AC power lines.
2. EUT is not for fixed, point-to-point operation, therefore no limits are specified.
3. No limits apply.

3. Equipment Under Test (EUT)

3.1 Equipment Specification

Applicant	ZBD Displays Ltd Building 3 Kingswood Kings Ride Ascot Berkshire SL5 8AD
Manufacturer of EUT	ZBD Displays Ltd
Brand name of EUT	ZBD Displays Ltd
Model Number of EUT	epop 55f
Proposed FCC ID	Not Stated
Serial Number of EUT	DD00000472B
Date when equipment was received by RN Electronics	18th September 2012
Date of test:	18th - 20th September 2012
Customer order number:	6789
Visual description of EUT:	Small plastic enclosure with one side showing a framed LCD panel. On the rear is a battery compartment.
Main function of the EUT:	Electronic shelf edge label
Height	39mm
Width	90mm
Depth	13mm
Weight	50g
Voltage	2.5V DC
Current required from above voltage source	50 mA peak

3.2 EUT Configurations for testing

Frequency range	902.5 – 927.5MHz
Normal use position	Mounted on shelf edge.
Normal test signals	GFSK (38.4kBaud)
Declared power level	+10dBm
Declared channel bandwidth	80kHz
Highest frequency generated / used	927.5MHz (Top channel)
Lowest frequency generated / used	32.kHz (RTC crystal)

3.3 EUT Modes

Mode	Description of mode	Used for Testing
Unmodulated carrier TX 902.5MHz	constant CW transmission	No
Unmodulated carrier TX 915MHz	constant CW transmission	No
Unmodulated carrier TX 927.5MHz	constant CW transmission	No
Standby /RX mode 902.5MHz	Receive mode	No
Standby /RX mode 915MHz	Receive mode	No
Standby /RX mode 927.5MHz	Receive mode	No
Constant Transmit data 902.5MHz	constant system modulated transmission	YES
Constant Transmit data 915MHz	constant system modulated transmission	YES
Constant Transmit data 927.5MHz	constant system modulated transmission	YES

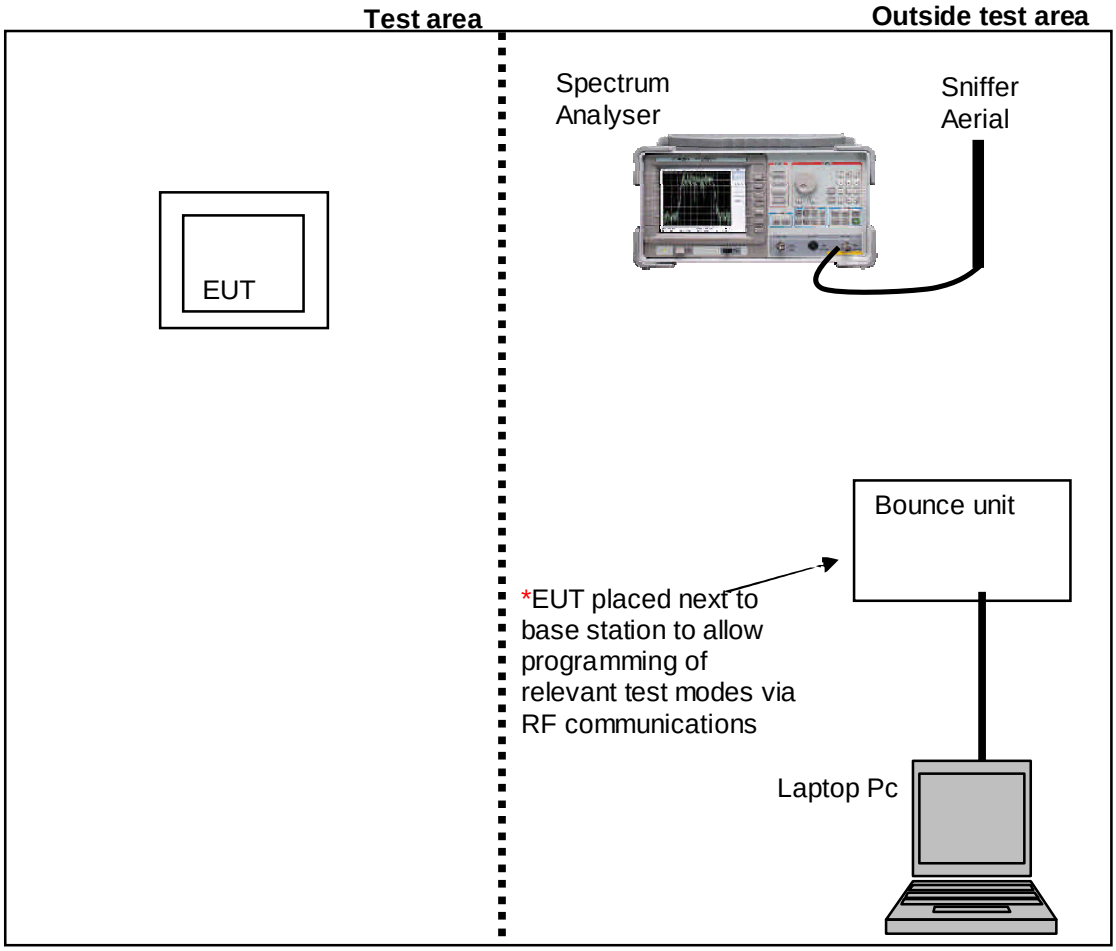
Other channels between the frequencies selected above were available each at 500 kHz channel spacing, however only the top, middle & bottom channels (covering the entire range) were selected for tests.

Description of ancillary equipment connected to the equipment under test, for the purpose of tests, can be found in Section 10.

Any modifications made to the EUT, whilst under test, can be found in Section 11.

This report was printed on: 26 October 2012

3.4 Emissions Configuration



New batteries were fitted into the unit before tests began and monitored to ensure supply parameters were maintained.

*The unit was only placed next to the base station for programming of channels and modes, and once programmed the EUT was placed back into the test chamber.

The spectrum analyser was only used to ensure the correct operating channel was programmed by detecting the RF carrier signal.

Bottom, middle & top channels were selected for tests were appropriate in combination with the above mentioned modes (see section 3.3). These were:-

Bottom = 902.5 MHz
Middle = 915 MHz
Top = 927.5 MHz

Power level setting for tests was P6.

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

4. Specifications

The tests were performed by RN Electronics Engineer Lee Chandler who set up the tests, the test equipment, and operated it in accordance with the ***R.N. Electronics Ltd*** procedures manual, ANSI C63.10-2009, FCC Part 15 and those specifications incorporated by reference into 47CFR15 (e.g. ANSI C63.4-2003).

R.N. Electronics Ltd sites M and OATS are listed with the FCC. Registration Number 293246

4.1 Deviations

ANSI C63-10-2009 deviations:
The reference standard ANSI C63.4-2003 was used, not the latest ANSI C63.4-2009

FCC Part 15 deviations:
None.

4.2 Tests at Extremes of Temperature & Voltage

The following test conditions were used to simulate testing at nominal or extremes.

☐ A permanent internal RF port was used for testing.
☒ A test fixture was used for testing.
☐ A temporary RF port was created for testing.
☒ The equipment internal RF port was used for testing.

4.3 Measurement Uncertainties

Parameter	Uncertainty
Transmitter Tests	
Bandwidth	± 1.9 %
Radiated RF power	± 3.5 dB
Radiated spurious emissions	30MHz - 1000MHz ±5.1dB 1000MHz - 2000MHz ±4.5dB 1 – 18 GHz ±3.5dB

5. Tests, Methods and Results

5.1 Conducted emissions

NOT APPLICABLE: EUT does not operate from the AC power lines nor contain provisions for operation while connected to AC power lines

5.2 Intentional radiator field strength

5.2.1 Test Methods

Test Requirements FCC Part 15C, Reference (15.249 a)

Test Method: ANSI C63.10, Reference (6.3 / 6.5)

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 antenna was scanned 1-4m in height in both Horizontal and Vertical polarisations. The EUT was rotated in all three orthogonal planes. The EUT was operated in Constant Transmit data 902.5MHz, Constant Transmit data 915MHz and Constant Transmit data 927.5MHz modes.

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. This site is listed with the FCC.

Both the equipment and the antenna were rotated 360° to record the maximised emission.

5.2.2 Test results

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

Test Environment:
Temperature: 22°C Humidity: 36%

Any Analyser plots can be found in Section 6.3 of this report.

Table of results with the EUT set to a power level of P6

Channel	Measured result PK (dBuV/m @3m)	Total QP (dBuV/m @3m)	EUT polarisation	Measurement polarisation
902.5MHz	86.8	86.6	H	H
915MHz	86.0	85.8	H	H
927.5MHz	86.6	86.4	V	V

LIMITS:
15.249(a) 50 mV/m @ 3m (94 dBµV/m @ 3m).

These results show that the EUT has **PASSED** this test.

5.2.2.1 Test Equipment used

E410, E411, E412, TMS933

See Section 10 for more details

5.3 Radiated emissions

5.3.1 Test Methods

Test Requirements FCC Part 15C, Reference (15.209)

Test Method: ANSI C63.10, Reference (6.4 – 6.6.)

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. The EUT was rotated in all three orthogonal planes. The EUT was operated in Constant Transmit data 902.5MHz, Constant Transmit data 915MHz and Constant Transmit data 927.5MHz modes.

5.3.1.2 Test Procedure

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

Below 30MHz, measurements were made in a semi-anechoic chamber (pre-scan) with any signals being measured on an OATS without a ground plane. The antenna was placed 1m above the ground. The equipment and the antenna were rotated 360° to record the worst case emissions. No Emissions were found in this frequency range.

30MHz - 1GHz, measurements were made on a site listed with the FCC. The equipment was rotated 360° and the antenna scanned 1 – 4 metres in both horizontal and vertical polarisations to record the worst case emissions.

Above 1GHz, measurements were made in a semi-anechoic chamber with appropriate absorbing material for use in this range. The EUT was raised and antenna was placed 1.5m above the ground in line with the EUT, which was rotated through 360° to record the worst case emissions.

All signals within 20dB of the limit were investigated.

5.3.2 Test results

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

Test Environment: **M**

Temperature: 22°C Humidity: 36%

Analyser plots for the Quasi-Peak / Average values as applicable can be found in Section 6.1 and 6.2 of this report.

Note: EUT tested in a continuous transmit mode for ease of test.

Bottom Channel

Horizontal

Signal No.	Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	QP - Lim1 (dB)
1	889.503	39.3	36.2	-9.8
2	915.503	40.0	36.6	-9.4

Vertical

Signal No.	Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	QP - Lim1 (dB)
1	889.504	38.5	34.5	-11.5
2	915.503	40.4	37.2	-8.8

Horizontal

Signal No.	Freq (MHz)	Peak Amp (dBuV)	AV Amp (dBuV)	AV - Lim1 (dB)
1	5415.021	52.7	49.0	-5.0

Vertical

Signal No.	Freq (MHz)	Peak Amp (dBuV)	AV Amp (dBuV)	AV - Lim1 (dB)
1	1805.007	33.8	28.9	-25.1
2	5415.023	52.5	48.9	-5.1

Middle Channel

Vertical

Signal No.	Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	QP - Lim1 (dB)
1	902.007	38.2	34.2	-11.8
2	928.004	40.1	36.5	-9.5

Vertical

Signal No.	Freq (MHz)	Peak Amp (dBuV)	AV Amp (dBuV)	AV - Lim1 (dB)
1	1830.007	42.9	38.8	-15.2
2	5490.022	52.6	49.2	-4.8

Horizontal

Signal No.	Freq (MHz)	Peak Amp (dBuV)	AV Amp (dBuV)	AV - Lim1 (dB)
1	1830.007	41.5	36.9	-17.1
2	5490.022	52.5	49.1	-4.9

Top Channel

Horizontal

Signal No.	Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	QP - Lim1 (dB)
1	914.503	39.8	37.0	-10.0
2	940.503	41.8	37.0	-10.0

Vertical

Signal No.	Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	QP - Lim1 (dB)
1	914.504	40.2	36.1	-10.9
2	940.504	41.2	37.1	-9.9

Horizontal

Signal No.	Freq (MHz)	Peak Amp (dBuV)	AV Amp (dBuV)	AV - Lim1 (dB)
1	1855.007	47.7	45.3	-8.7
2	5565.021	52.0	48.7	-5.3

Vertical

Signal No.	Freq (MHz)	Peak Amp (dBuV)	AV Amp (dBuV)	AV - Lim1 (dB)
1	1855.007	47.6	44.9	-9.1
2	4637.518	46.7	40.3	-13.7
3	5565.020	52.5	49.1	-4.9

LIMITS:
15.209 limits are applicable in the restricted bands of 15.205 with the relevant detector.
15.249(a) harmonics must not exceed 500 (54dB) µV/m @ 3m.

n.b. the general limits of 15.209 are as drawn on the respective plots.

These show that the **EUT** has **PASSED** this test.

5.3.2.1 Test Equipment used

E268, E410, E411, E412, TMS81, TMS82, TMS933

See Section 10 for more details

5.4 Frequency stability

NOT APPLICABLE: This test is only applicable to point-to-point applications. The manufacture declares that the EUT is not for this use.

5.5 Occupied bandwidth and band edge

5.5.1 Test Methods

Test Requirements FCC Part 15C, Reference (15.215)

Test Method: ANSI C63.10, Reference (6.9)

5.5.1.1 Configuration of EUT

The EUT was place on a bench in a test fixture and measurements were made relative to the EIRP measurements made in the chamber. The EUT was operated in Constant Transmit data 902.5MHz, Constant Transmit data 915MHz and Constant Transmit data 927.5MHz modes.

5.5.1.2 Test Procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment noted below. A 1kHz RBW, 3x VBW, auto sweep time and max hold settings were used for the 20dB bandwidth.
The marker delta method was used for the band-edge compliance test.

5.5.2 Test results

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

Temperature of test Environment: 21°C

Analyser plots for the 20dB bandwidth can be found in Section 6.4 of this report. See also section 6.5 of this report for band edge plots.

Channel	Result	Plot reference
Bottom	63.5kHz	J45152-3, Bottom channel 20dB BW (Constant TX modulated).spt
Middle	62.5kHz	J45152-3, Middle channel 20dB BW (Constant TX modulated).spt
Top	62.5kHz	J45152-3, Top channel 20dB BW (Constant TX modulated).spt

LIMITS: 15.215(c) The 20dB bandwidth of the emission must be contained within the designated frequency band.

The restricted band edges closest to the EUT frequency of 902-928MHz are 614 & 960MHz.

Further wider span plots have been taken to show the fact that there are no spurious emissions above the restricted limits of 15.209.
These results show that the **EUT** has **PASSED** this test.

5.5.2.1 Test Equipment used

E342, Receiving Antenna

See Section 10 for more details.

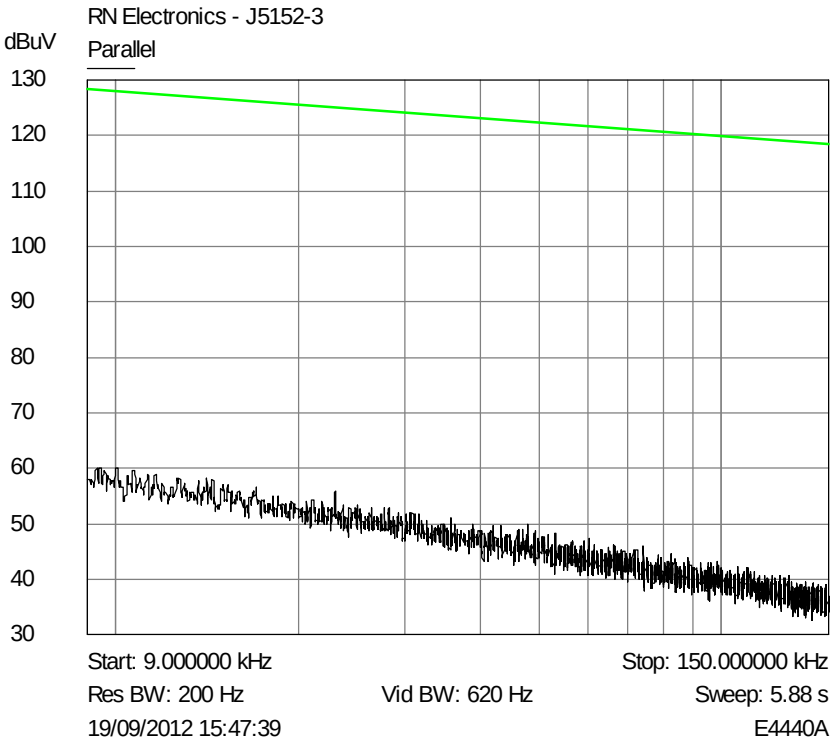
5.6 Duty cycle

NOT APPLICABLE: No limits apply

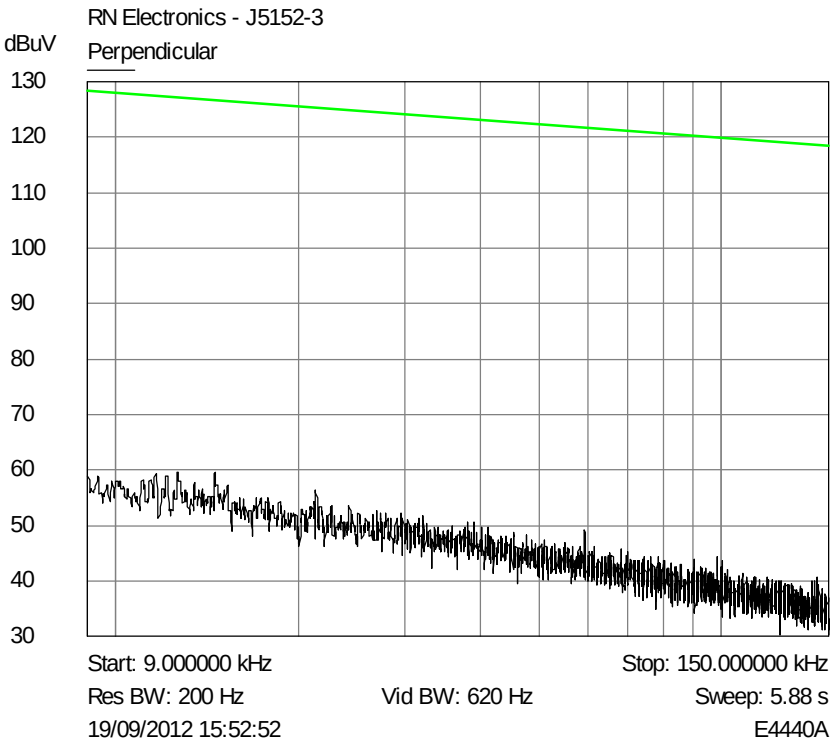
6. Plots and Results

6.1 Radiated Emissions 9kHz – 1GHz

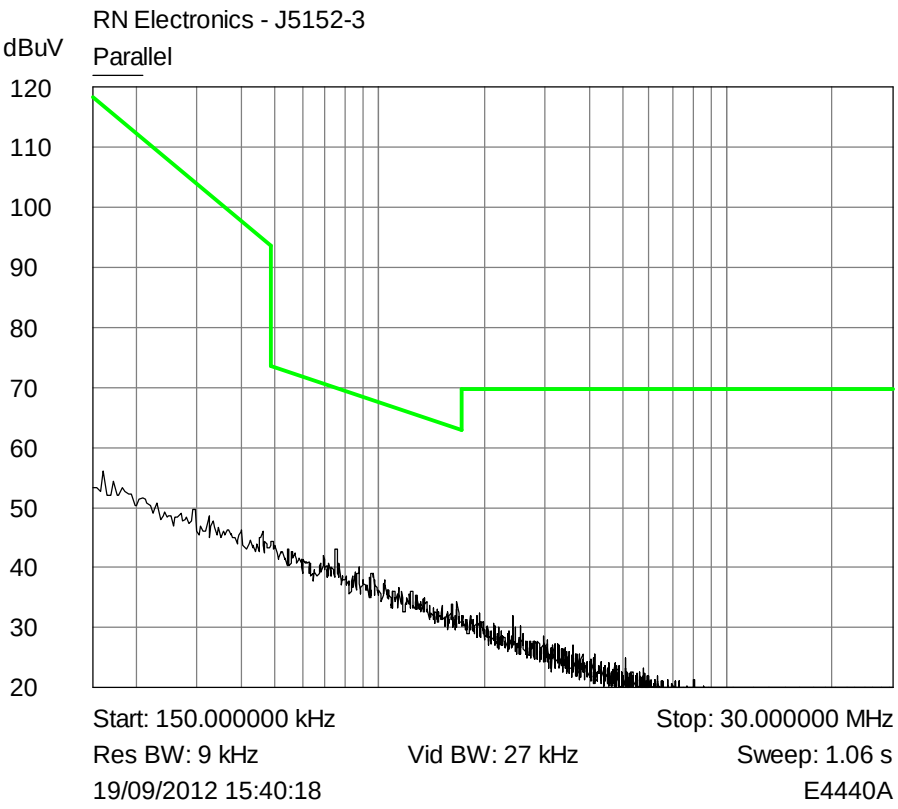
Plots shown are for Middle channel Transmit mode only.



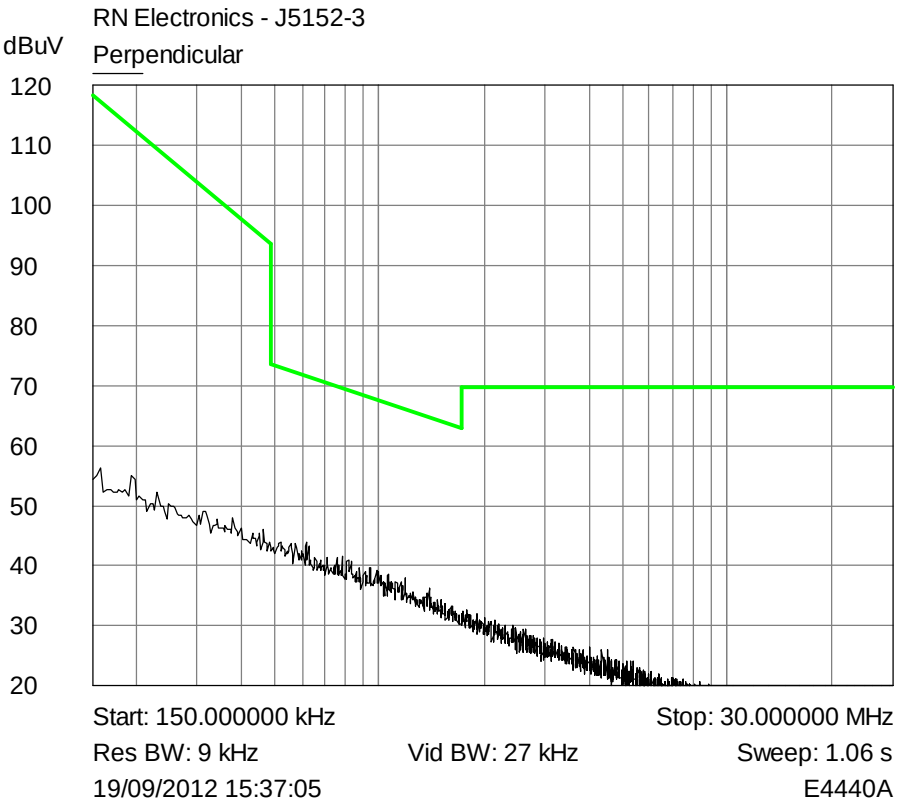
Plot of peak Parallel emissions 9 - 150kHz against the quasi-peak limit line.



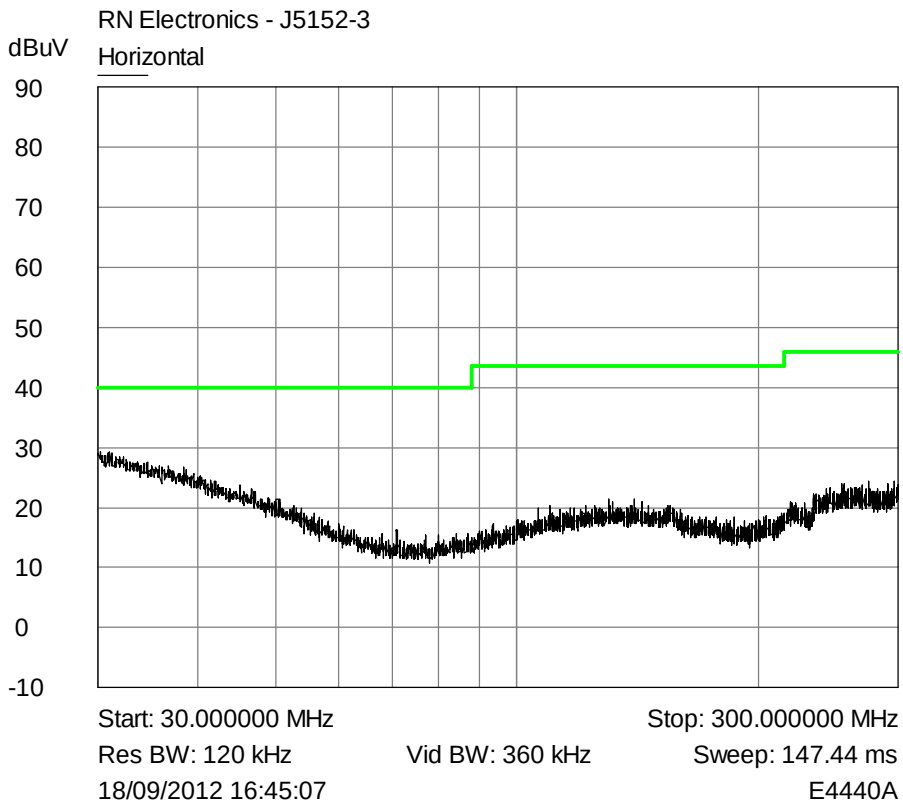
Plot of peak Perpendicular emissions 9 - 150kHz against the quasi-peak limit line.



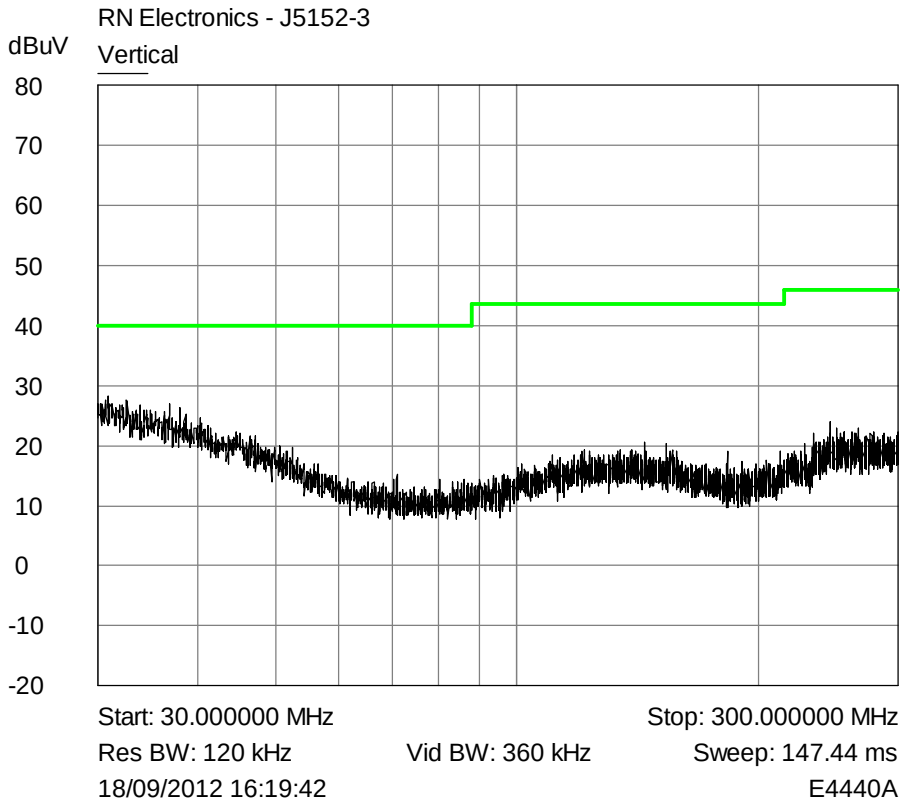
Plot of peak Parallel emissions 150kHz - 30MHz against the quasi-peak limit line.



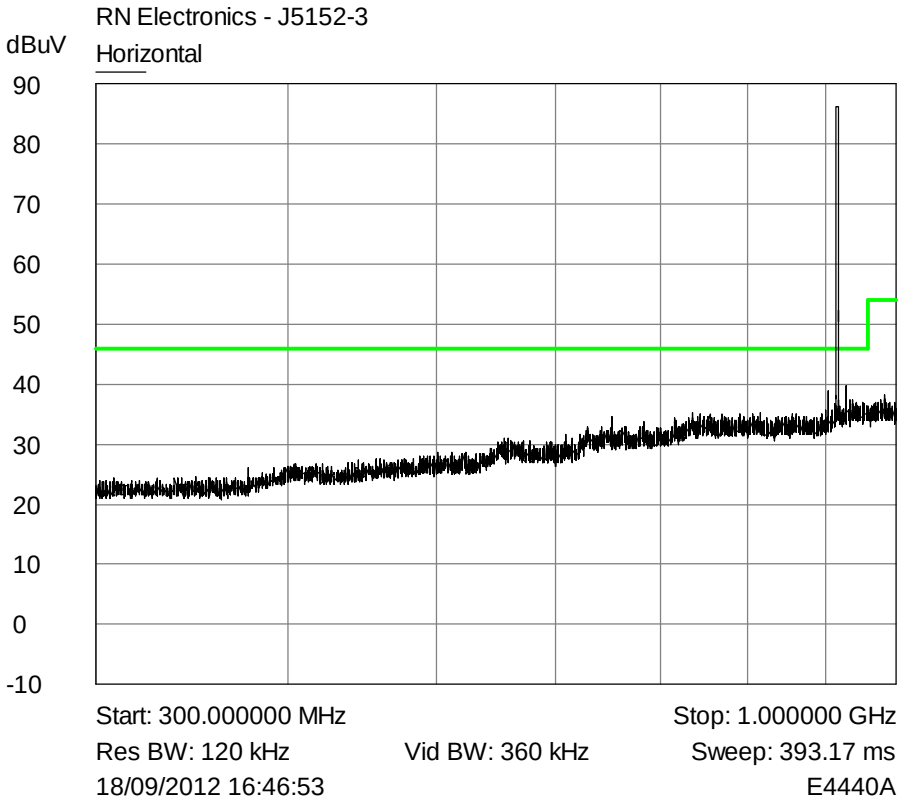
Plot of peak Perpendicular emissions 150kHz - 30MHz against the quasi-peak limit line.



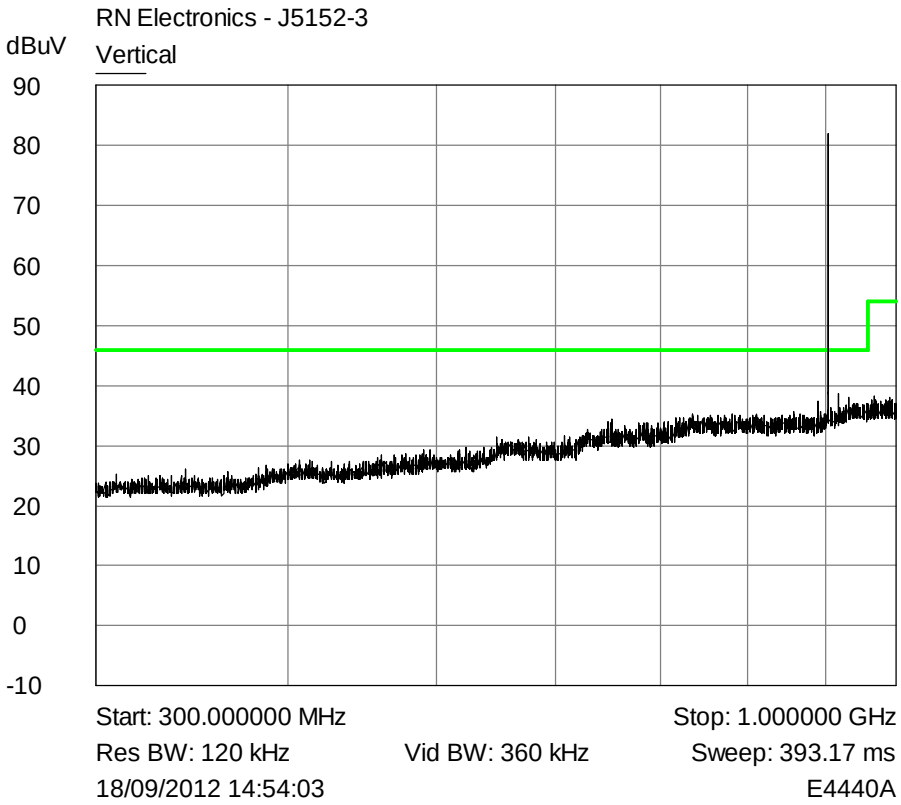
Plot of peak horizontal emissions 30MHz - 300MHz against the quasi-peak limit line.



Plot of peak vertical emissions 30MHz - 300MHz against the quasi-peak limit line.

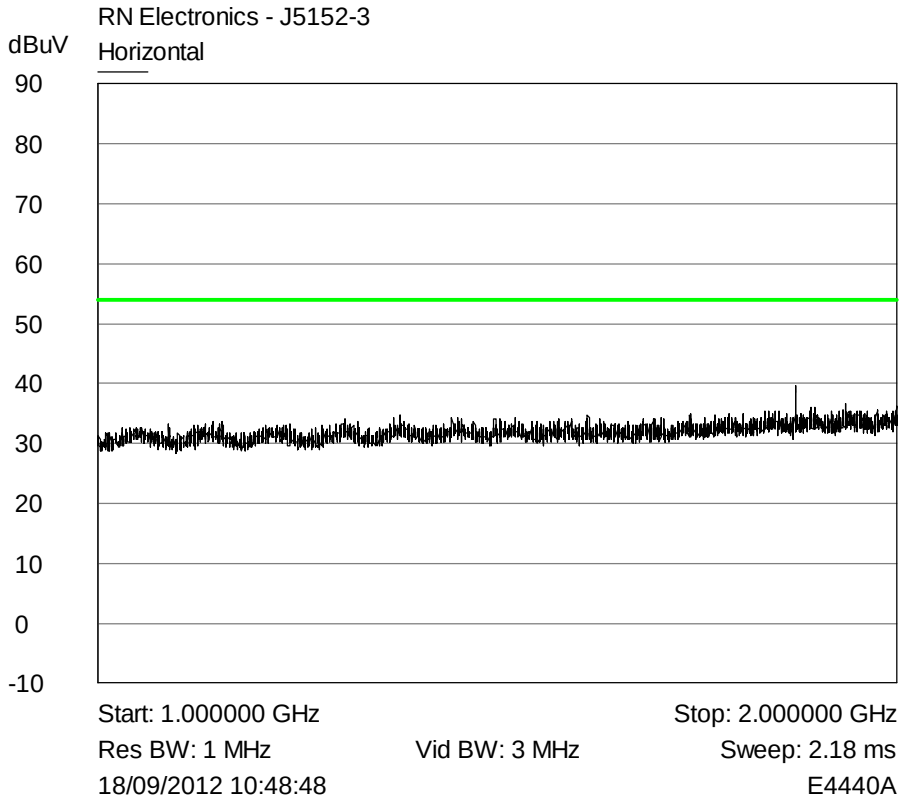


Plot of peak horizontal emissions 300MHz - 1GHz against the quasi-peak limit line.

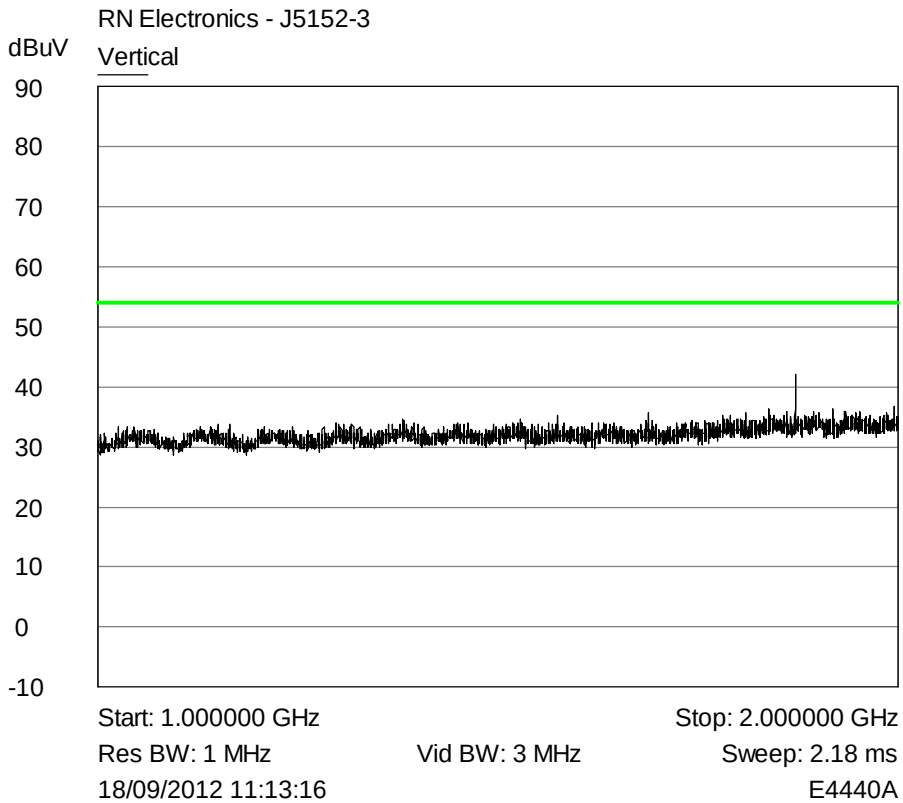


Plot of peak vertical emissions 300MHz - 1GHz against the quasi-peak limit line.

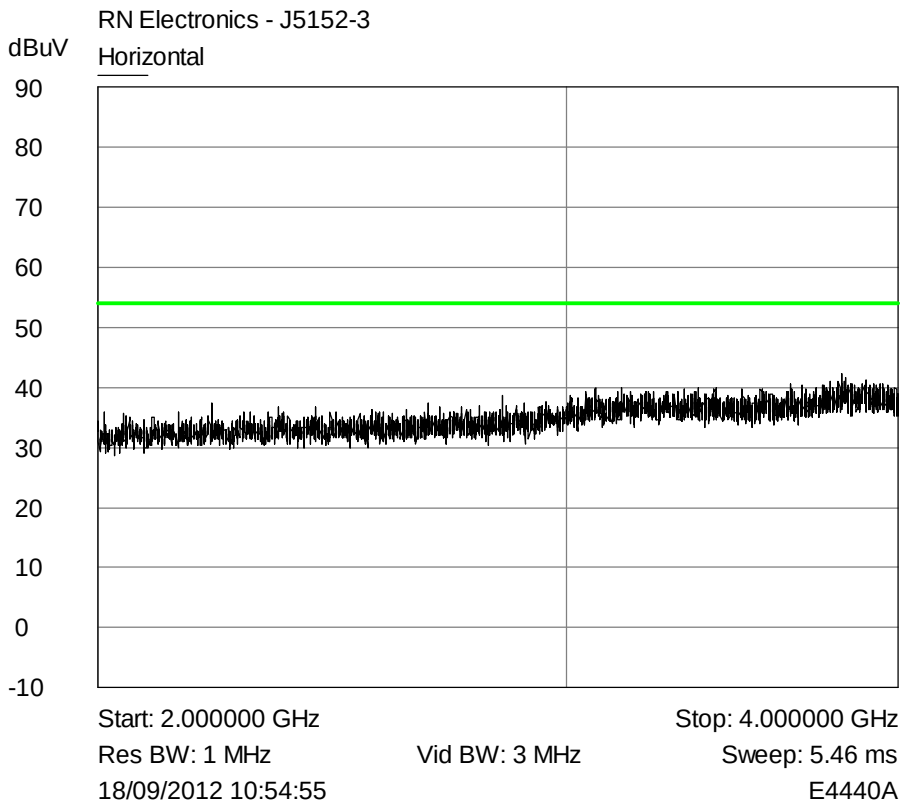
6.2 Radiated Emissions above 1GHz



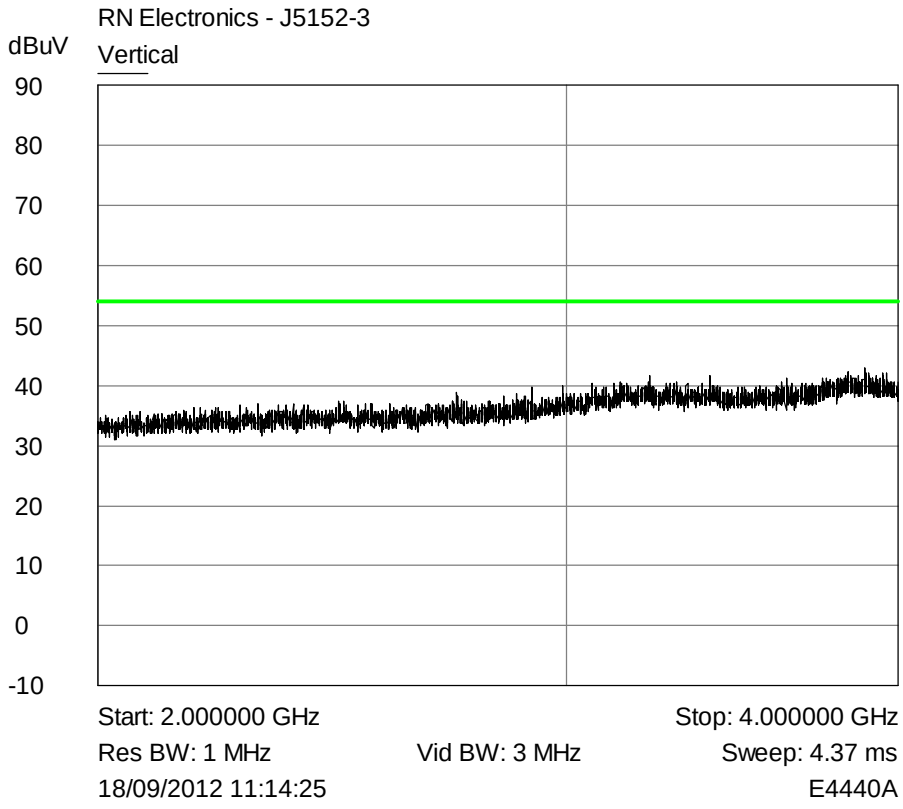
Plot of average horizontal emissions 1GHz - 2GHz against the average limit line.



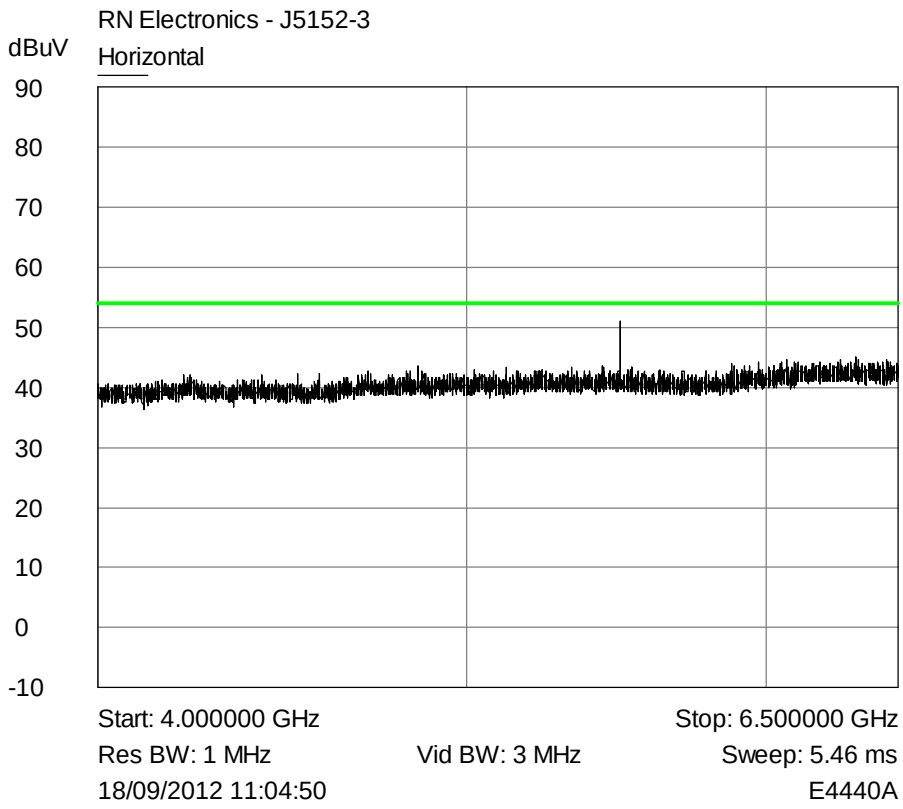
Plot of average vertical emissions 1GHz - 2GHz against the average limit line.



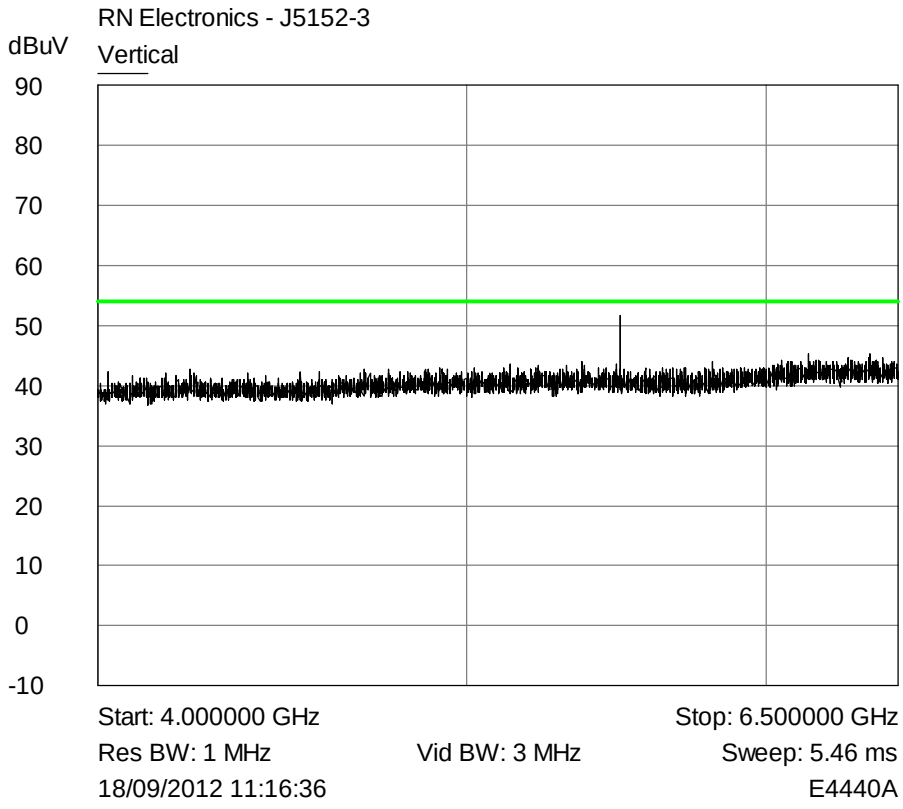
Plot of peak horizontal emissions 2GHz – 4GHz against the average limit line.



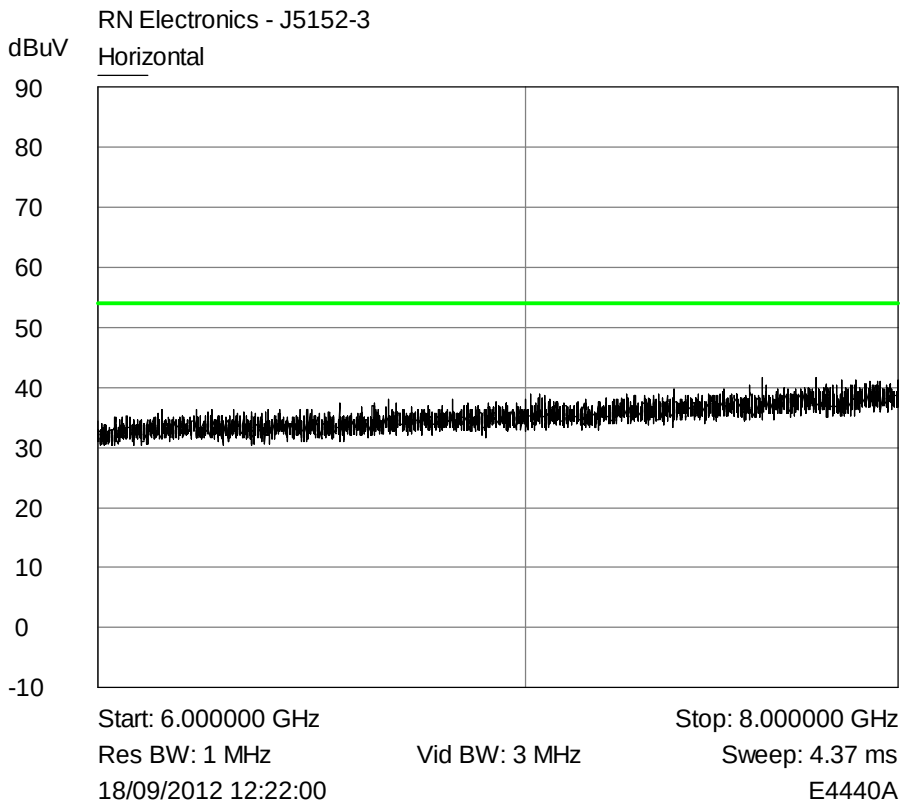
Plot of peak vertical emissions 2GHz – 4GHz against the average limit line.



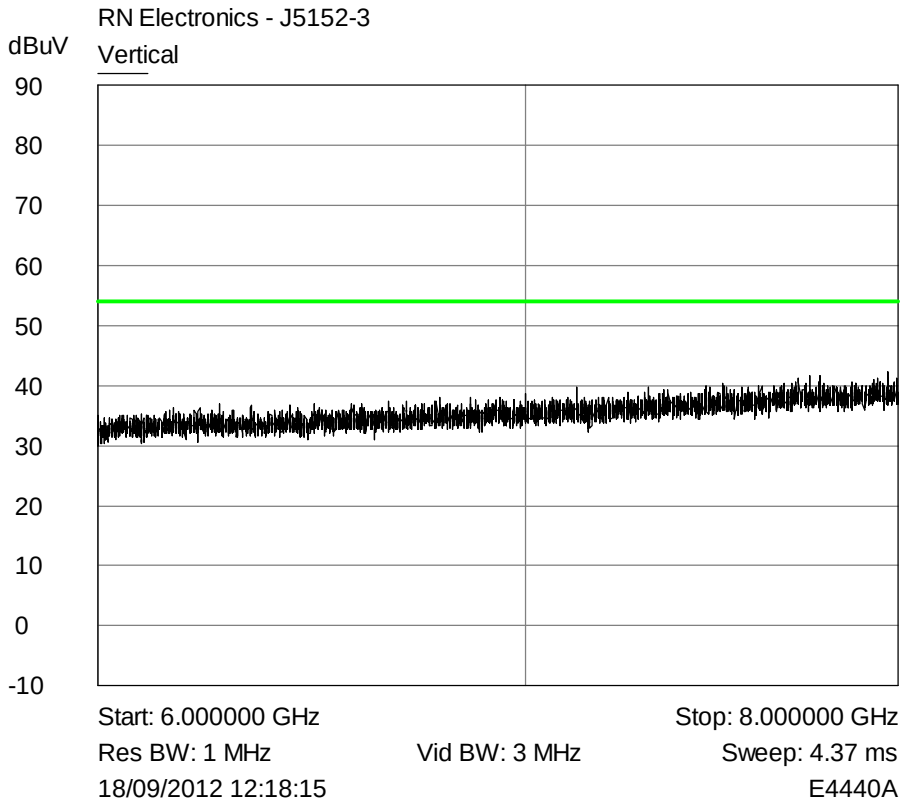
Plot of peak horizontal emissions 4GHz – 6.5GHz against the average limit line.



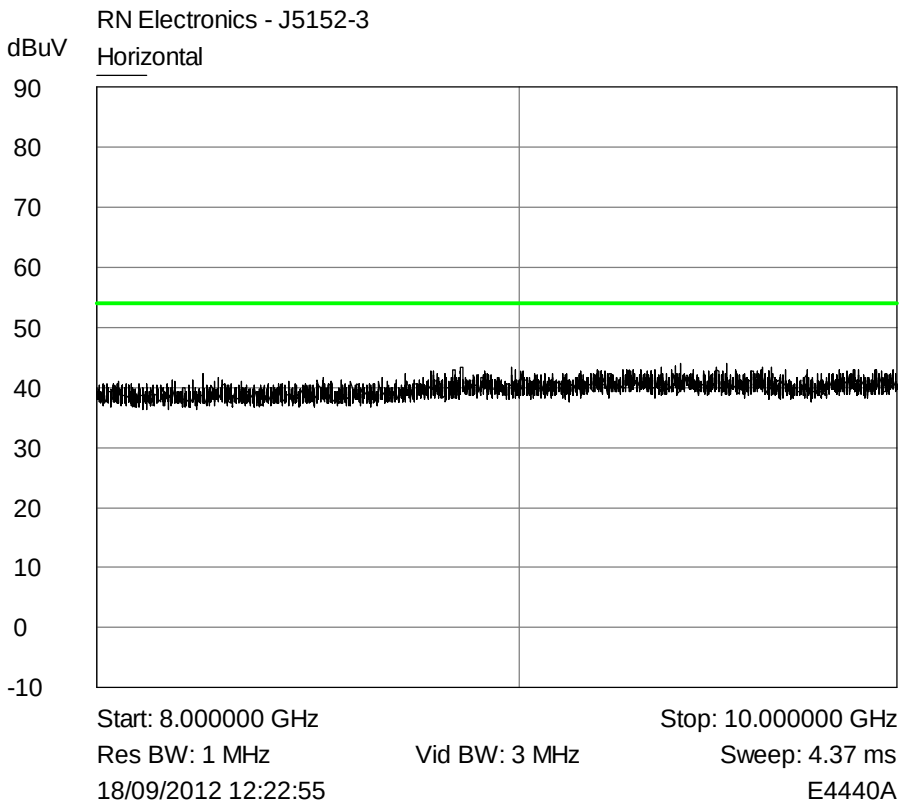
Plot of peak vertical emissions 4GHz – 6.5GHz against the average limit line.



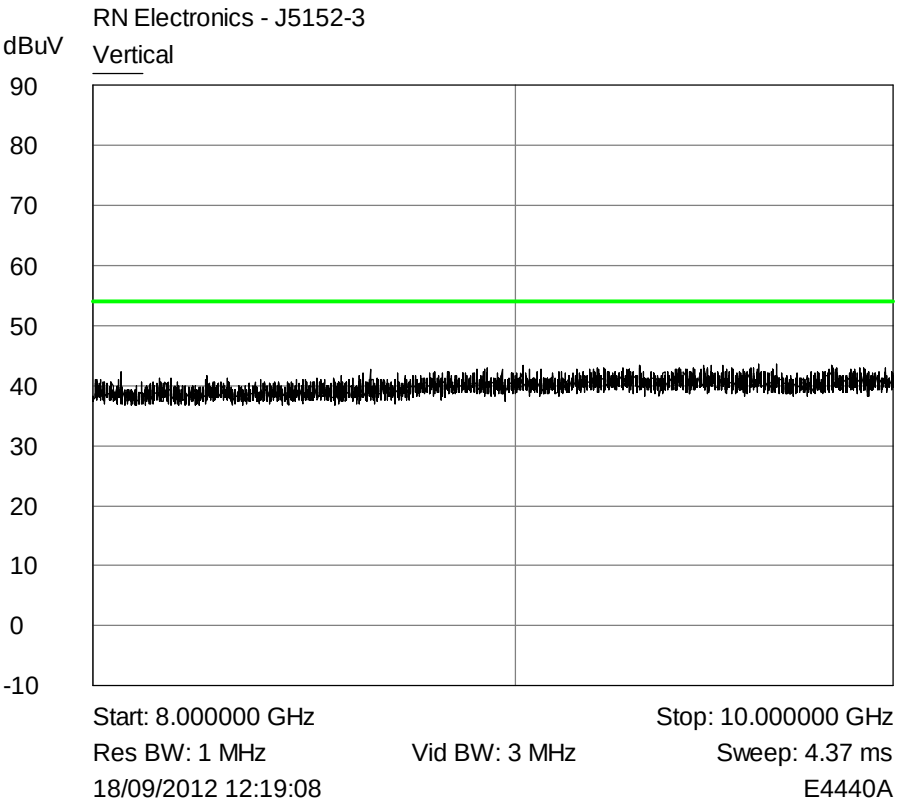
Plot of average horizontal emissions 6GHz - 8GHz against the average limit line.



Plot of average vertical emissions 6GHz - 8GHz against the average limit line.

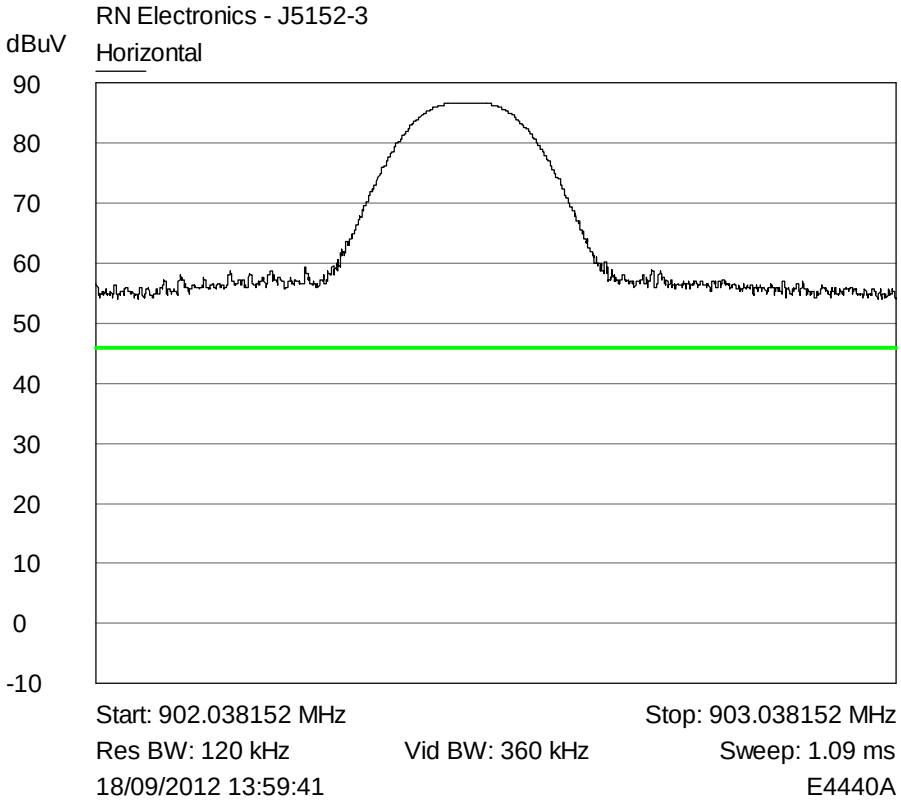


Plot of peak horizontal emissions 8GHz – 10GHz against the average limit line.

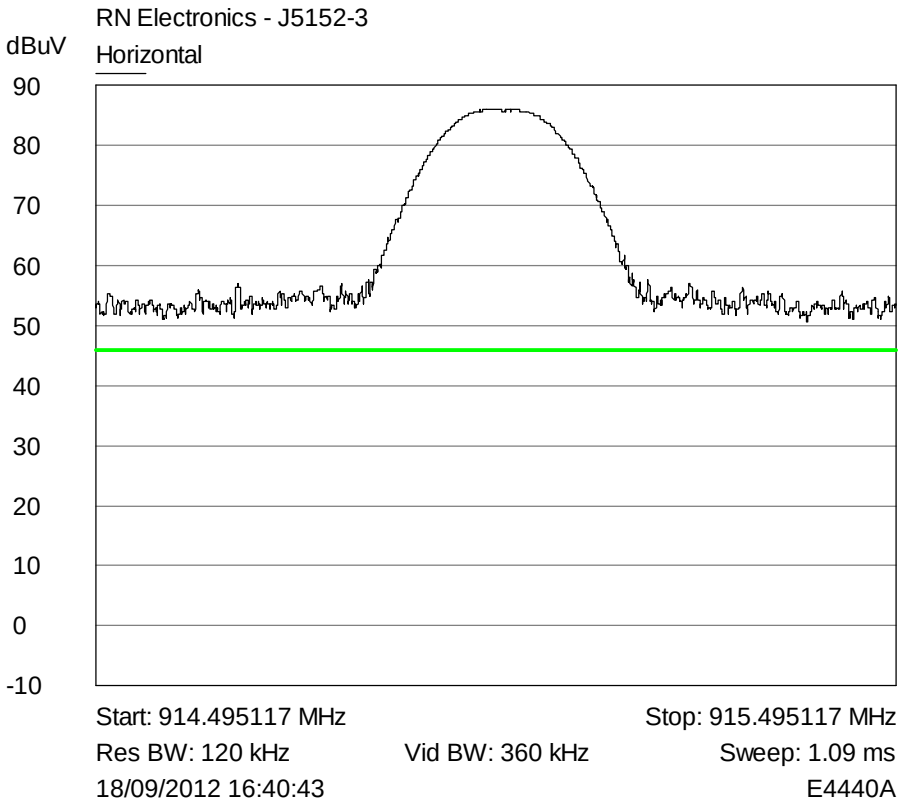


Plot of peak vertical emissions 8GHz – 10GHz against the average limit line.

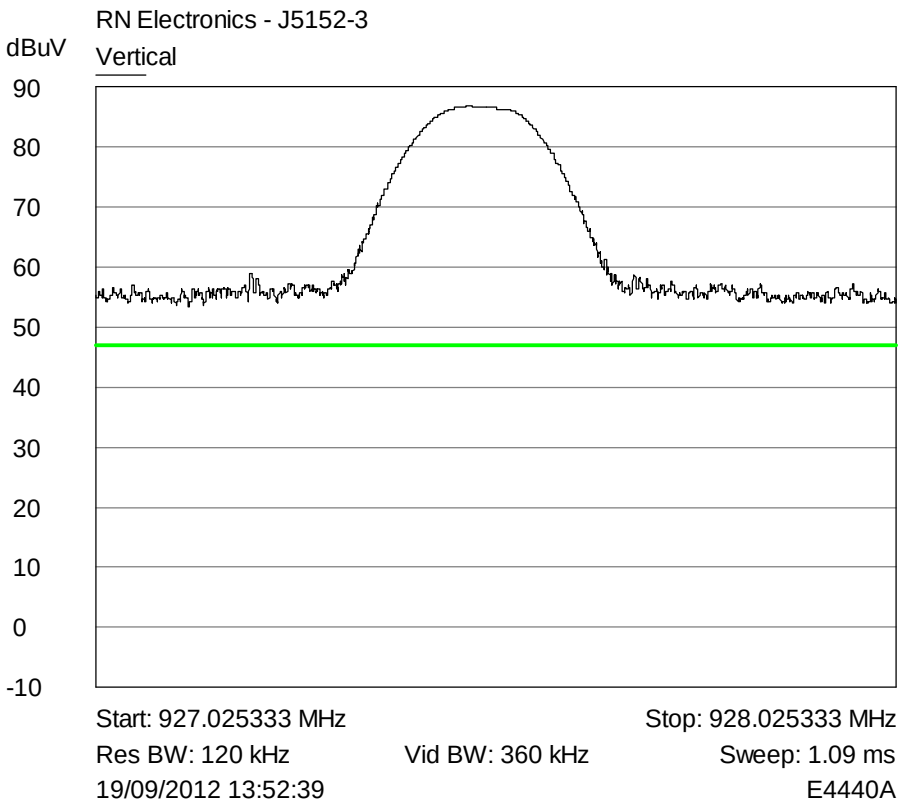
6.3 Fundamental Emissions



Bottom Channel



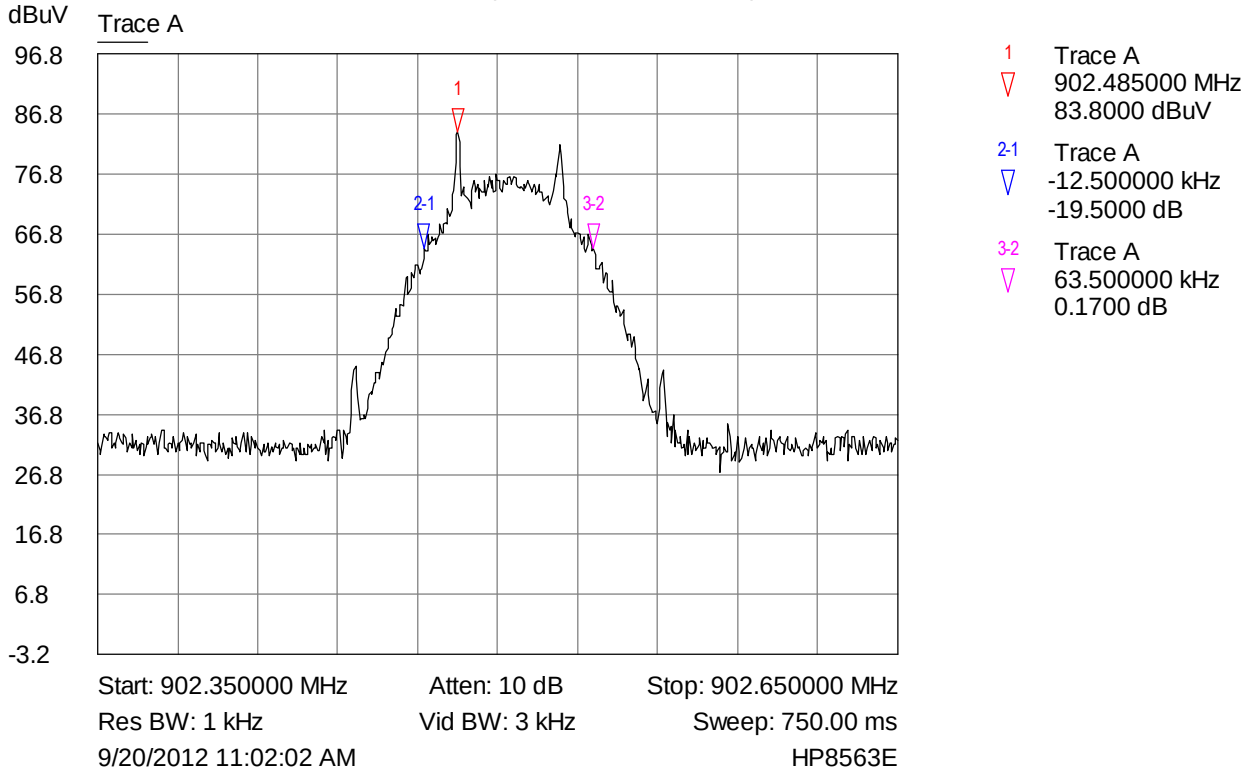
Middle Channel


RN Electronics - J5152-3
dBuV
Vertical
90
80
70
60
50
40
30
20
10
0
-10
Start: 927.025333 MHz
Stop: 928.025333 MHz
Res BW: 120 kHz
Vid BW: 360 kHz
Sweep: 1.09 ms
19/09/2012 13:52:39
E4440A

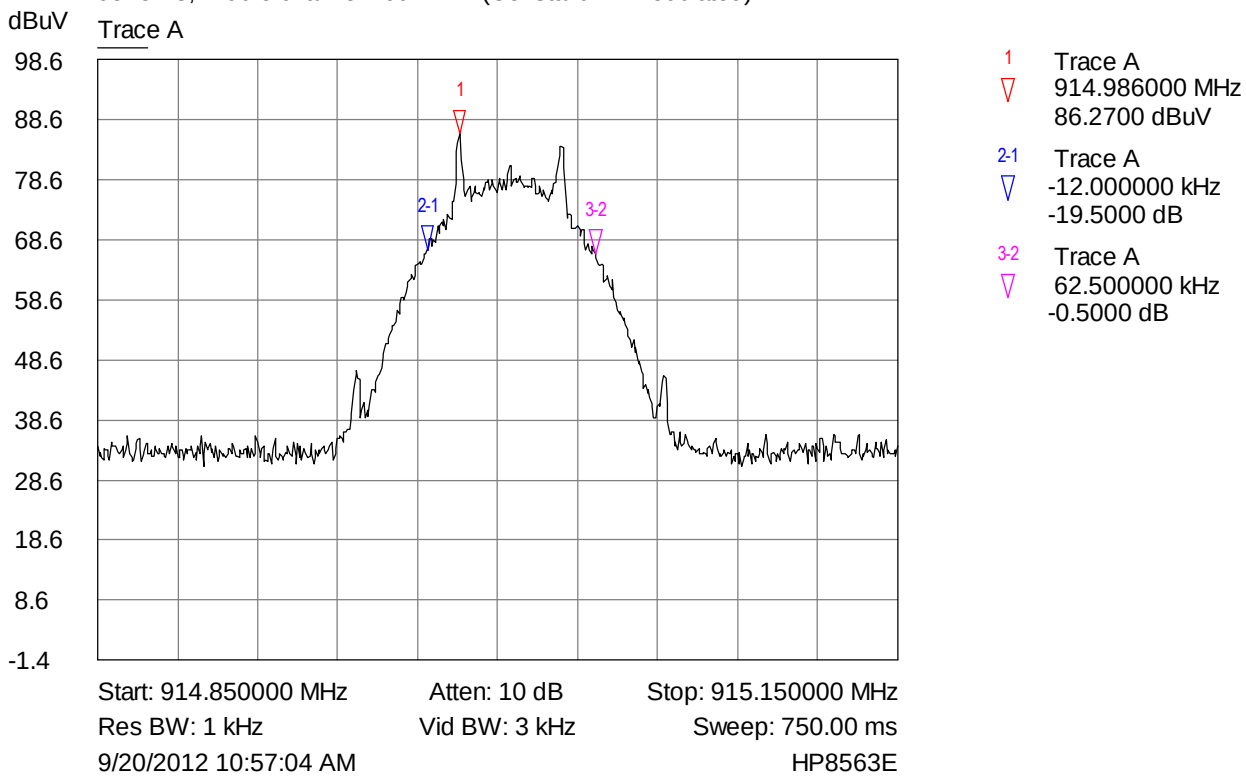
Top Channel

6.4 20dB Bandwidth

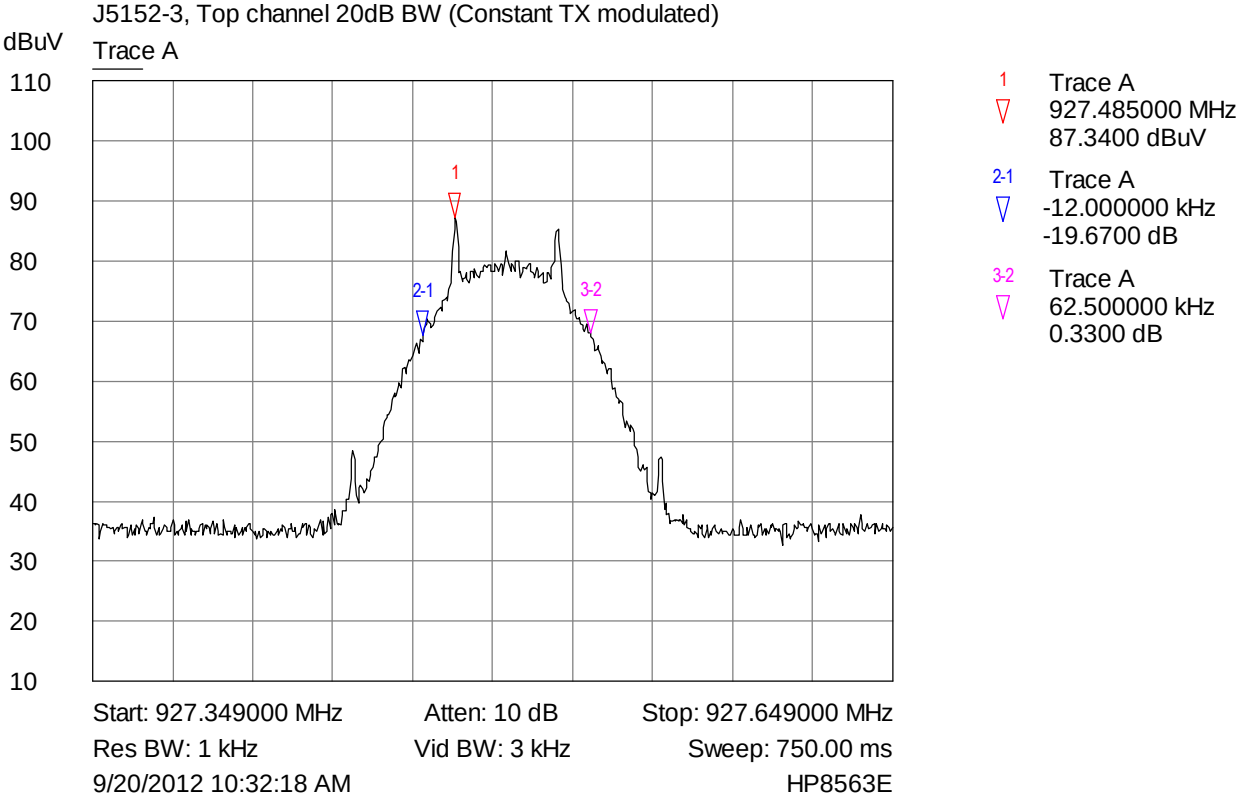
J5152-3, Bottom channel 20dB BW (Constant TX modulated)



J5152-3, Middle channel 20dB BW (Constant TX modulated)



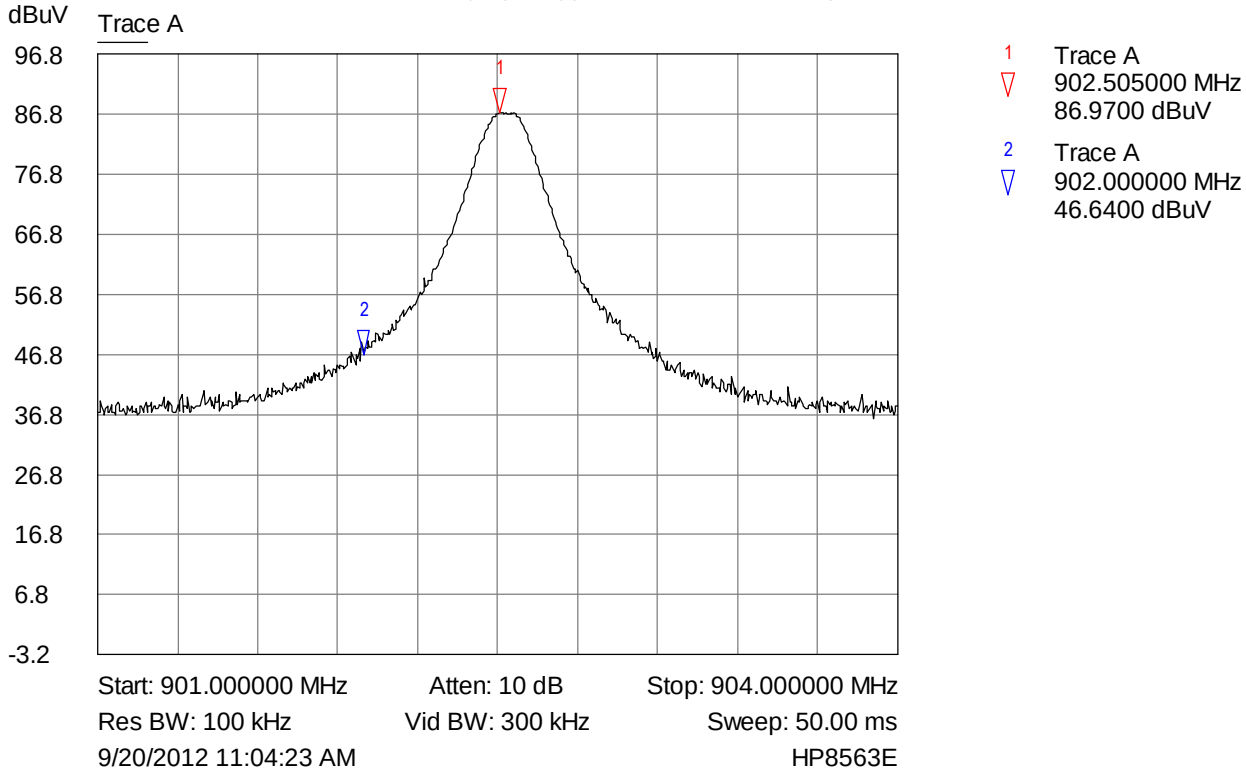
J5152-3, Top channel 20dB BW (Constant TX modulated)



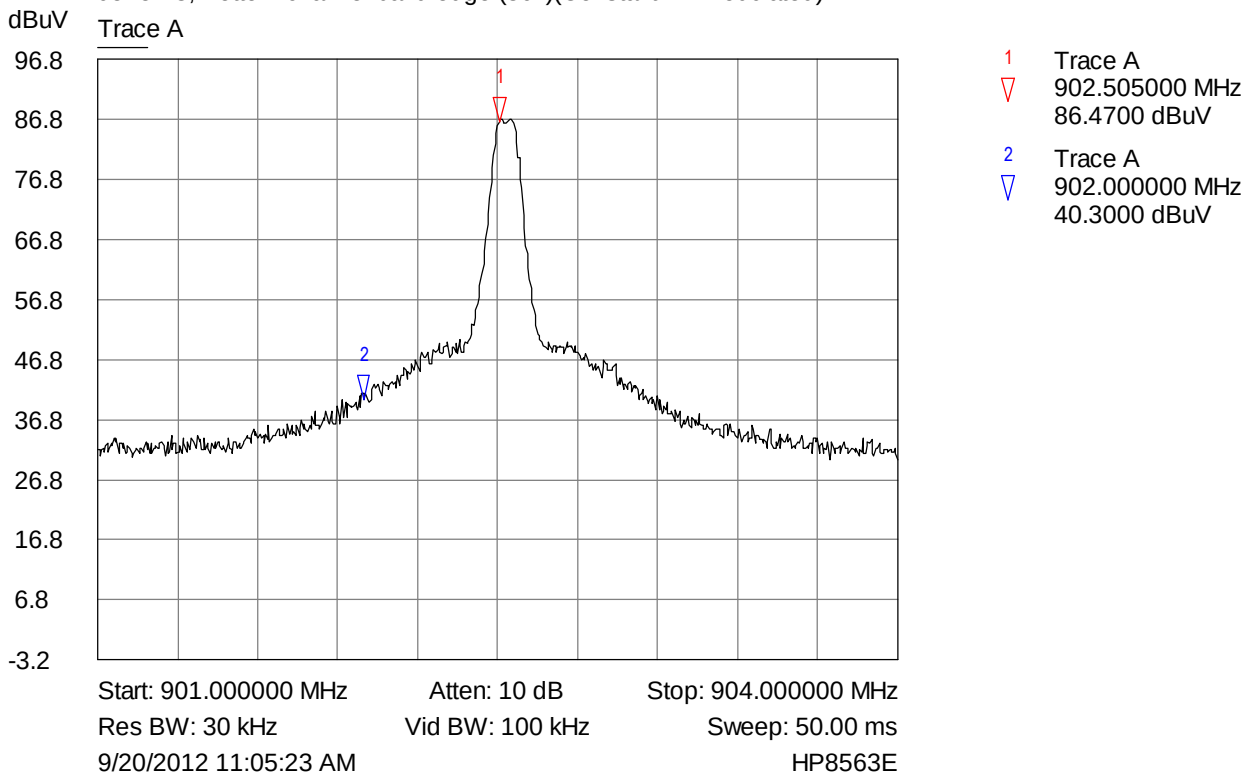
6.5 Band Edge Compliance

Band Edge. / Restricted band edge.

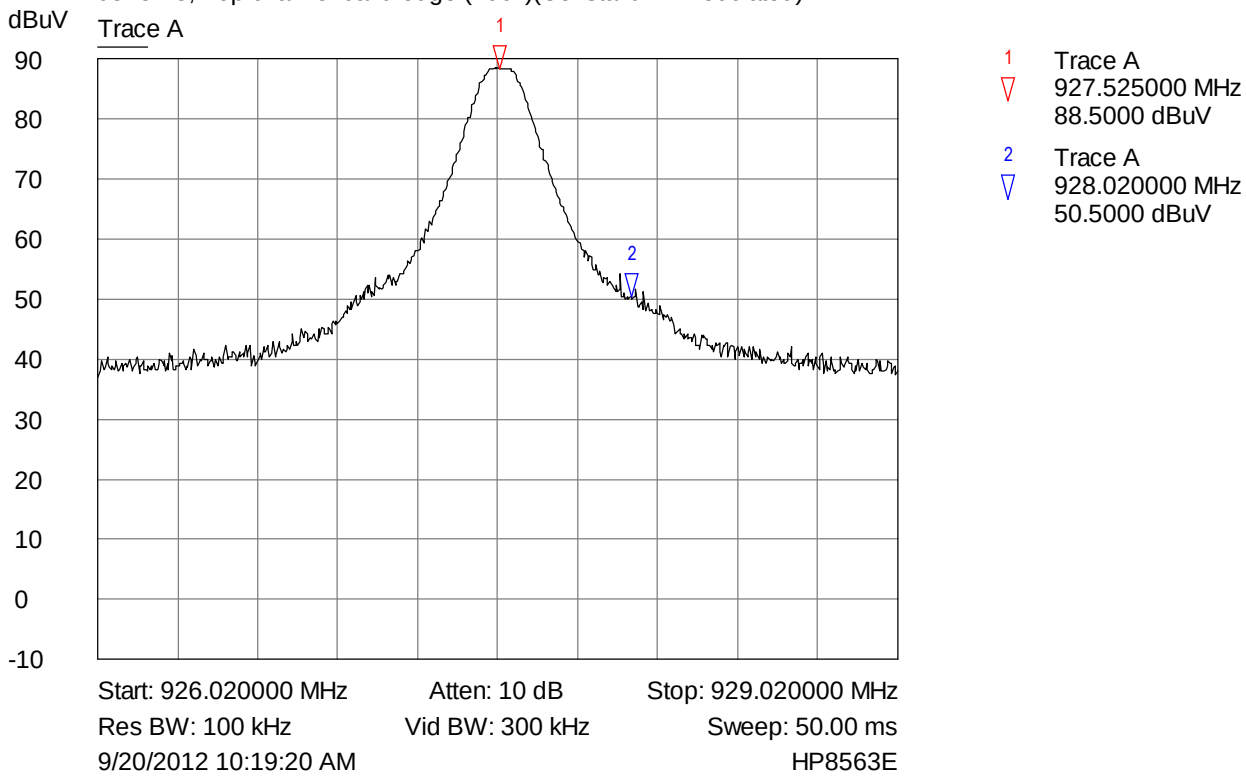
J5152-3, Bottom channel band edge (100k)(Constant TX modulated)



J5152-3, Bottom channel band edge (30k)(Constant TX modulated)



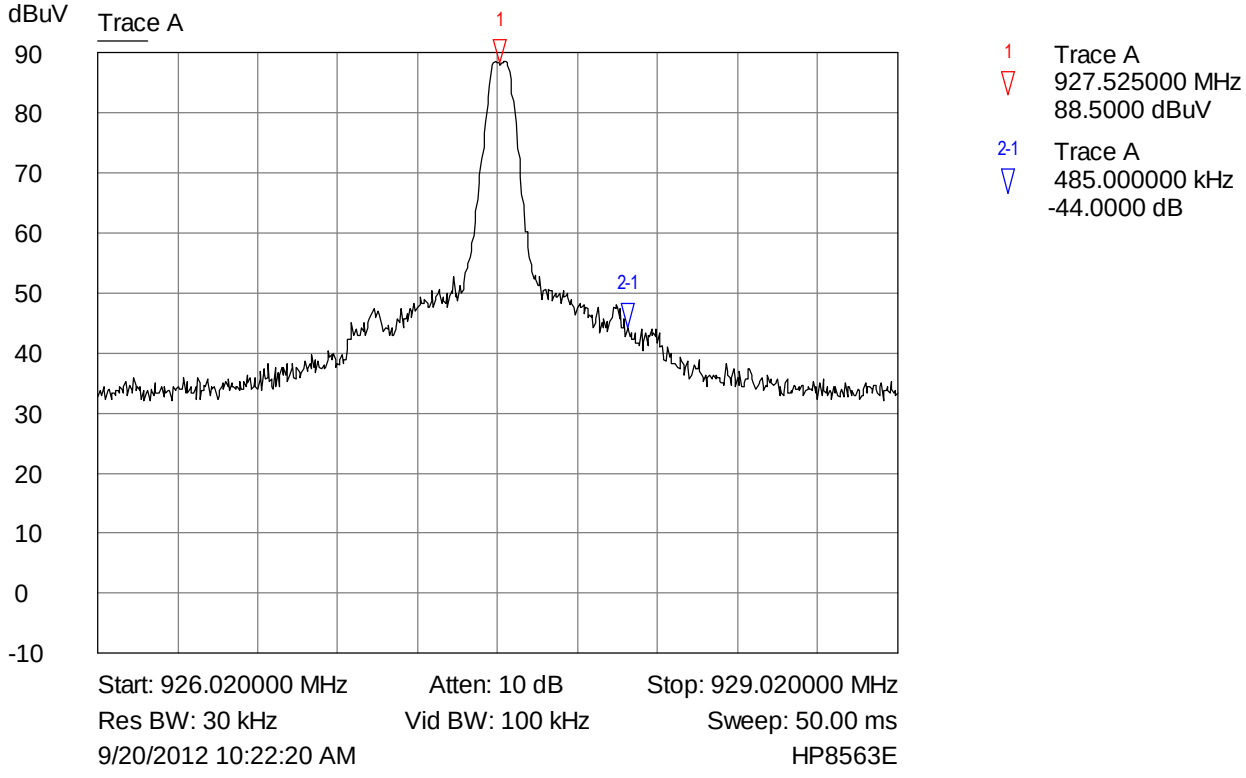
J5152-3, Top channel band edge (100k)(Constant TX modulated)



1 Trace A
927.525000 MHz
88.5000 dBuV

2 Trace A
928.020000 MHz
50.5000 dBuV

J5152-3, Top channel band edge (30k)(Constant TX modulated)



1 Trace A
927.525000 MHz
88.5000 dBuV

2-1 Trace A
485.000000 kHz
-44.0000 dB

7. Explanatory Notes

7.1 Explanation of Table of Signals Measured

Measurements are made as required by the standard. These measurements are made and recorded using detectors, either peak, quasi peak or average dependant on the test. A table of results has been given following the relevant plots. This table looks similar to the one illustrated below dependant on the measurements required by the test: -

Signal No.	Freq (MHz)	Peak Amp (dBuV)	Pk – Lim 1 (dB)	QP Amp (dBuV)	QP - Lim1 (dB)	Av Amp (dBuV)	Av - Lim1 (dB)
1	12345	54.9	-10.5	48.0	-12.6	37.6	-14.4

Column One - Labelled Signal No. is an incremental number that the receiver has given to each signal that has been measured.

Column Two - Labelled Freq (MHz) is the approximate frequency of the signal received.

Column Three - Labelled Peak Amp (dBμV) is the level of received signal that was measured in dB above 1μV using the peak detector.

Column Four - Labelled Pk - Lim1 (dB) is the difference in level from the peak signal given to the active limit line. If this column appears in the table the peak detector measurement is required by the standard for this test. The results entered in this column indicate the signal level relative to the compliance limit required. Negative numbers indicate that the product is compliant.

Column Five - Labelled QP Amp (dBμV) is the level of received signal that was measured in dB above 1μV using the quasi-peak detector.

Column Six - Labelled QP - Lim1 (dB) is the difference in level from the quasi-peak signal given to the active limit line. If this column appears in the table the quasi-peak detector measurement is required by the standard for this test. The results entered in this column indicate the signal level relative to the compliance limit required. Negative numbers indicate that the product is compliant.

Column Seven - Labelled Av Amp (dBμV) is the level of received signal that was measured in dB above 1μV using the average detector.

Column Eight - Labelled Av - Lim1 (dB) is the difference in level from the average signal given to the active limit line. If this column appears in the table the average detector measurement is required by the standard for this test. The results entered in this column indicate the signal level relative to the compliance limit required. Negative numbers indicate that the product is compliant.

Only signals highlighted in red are deemed to exceed the limit of the detector required.

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 dB μV/m.
(b) limit of 300 μV/m at 10m equates to 20.log (300 . 10/3) = 60 dB μV/m at 3m
(c) limit of 30 μV/m at 30m, but below 30MHz, equates to 20.log(30) + 40.log(30/3) = 69.5 dBμV/m at 3m, as extrapolation factor below 30MHz is 40dB/decade per 15.31(f)(2).

8. Photographs

Photograph of the EUT as viewed from in front of the antenna, site M.

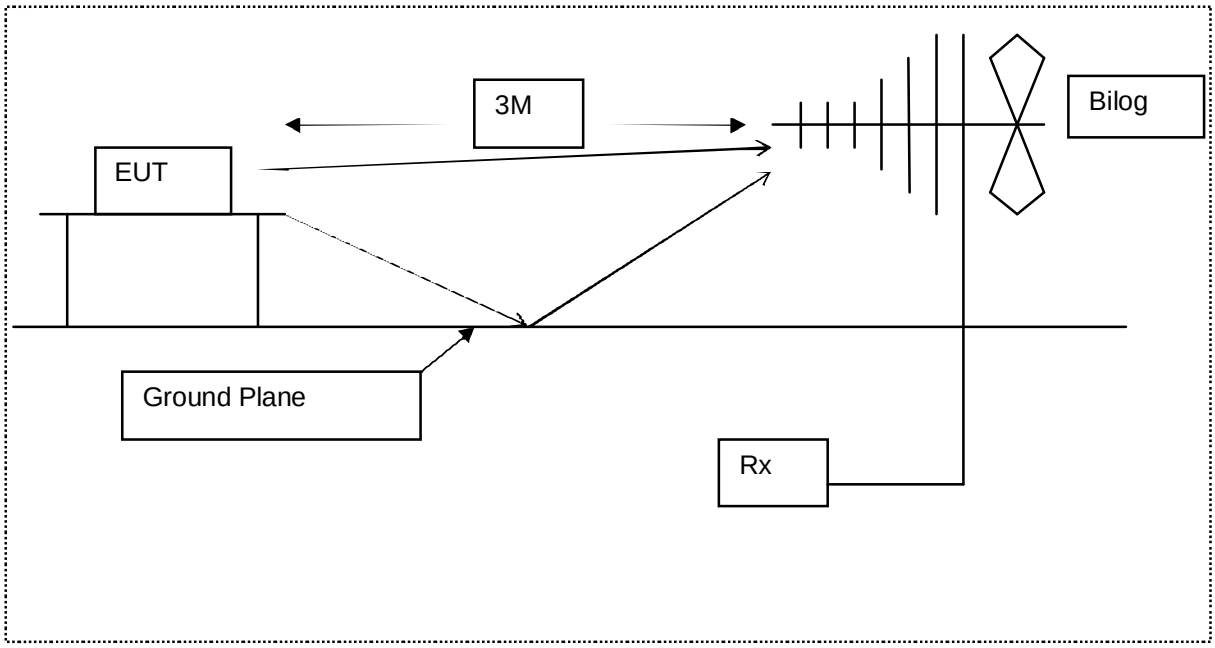
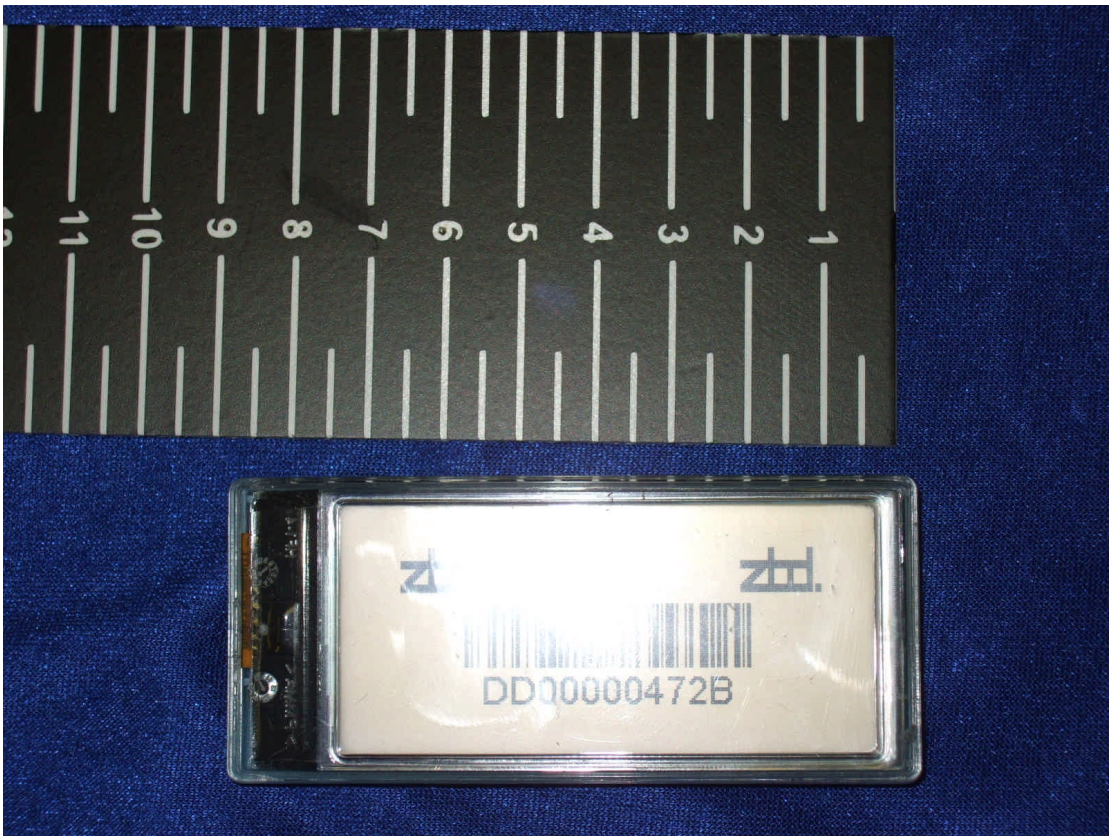
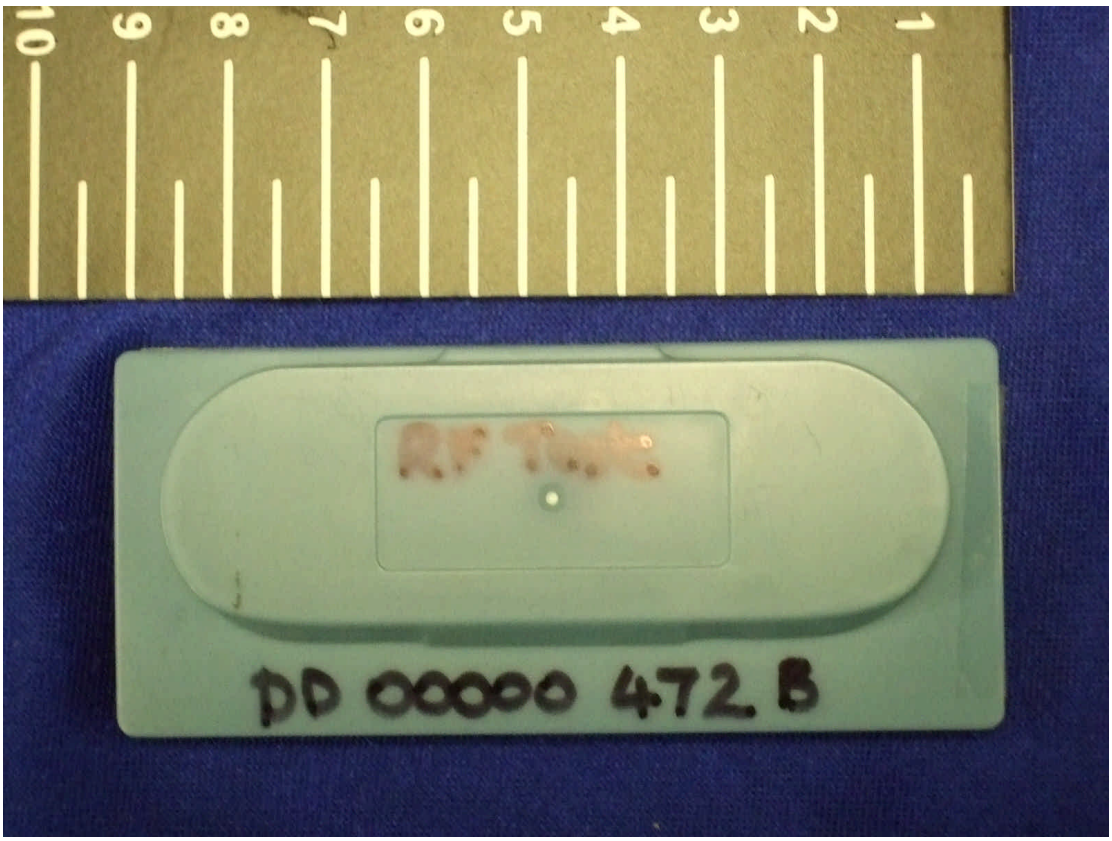


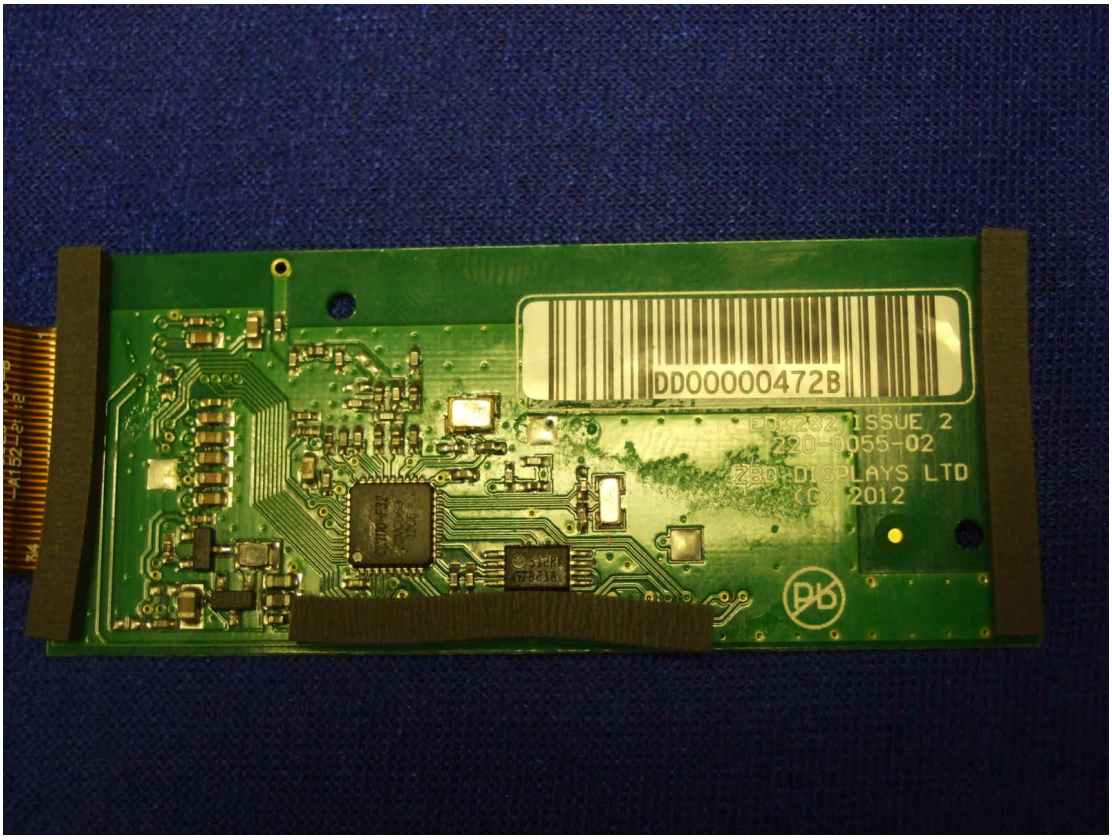
Diagram of the radiated emissions test setup.

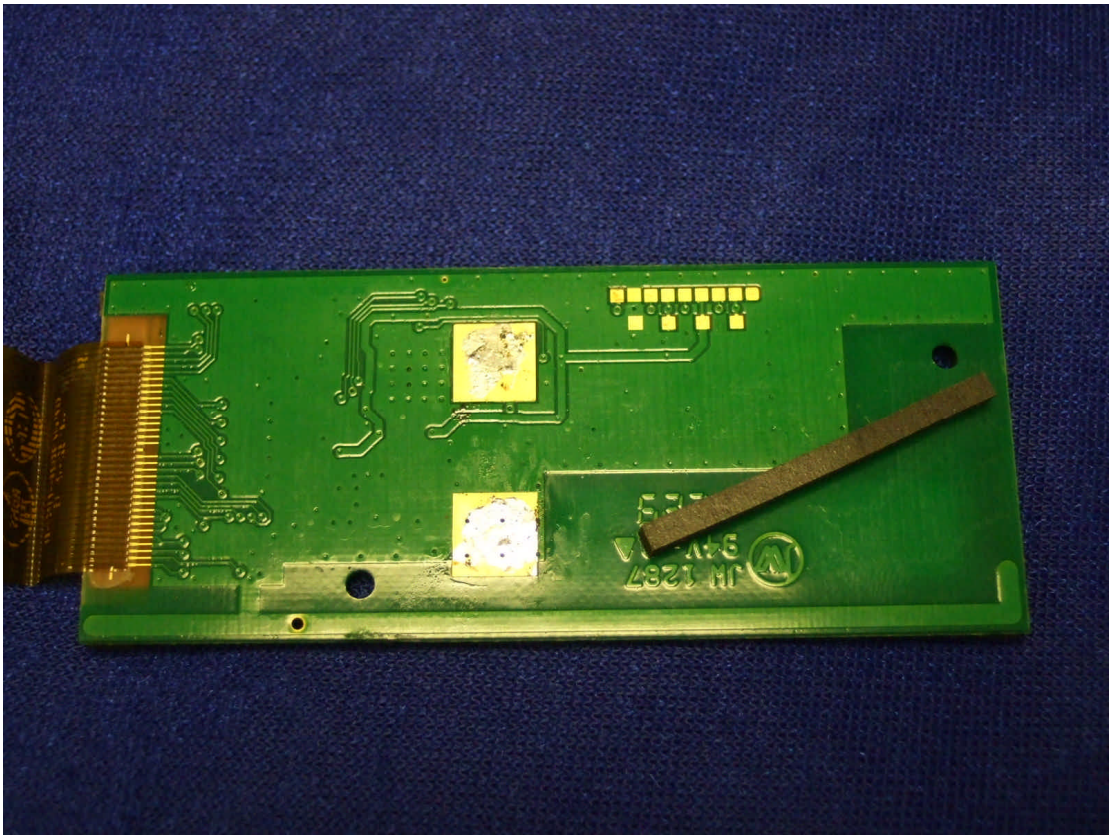




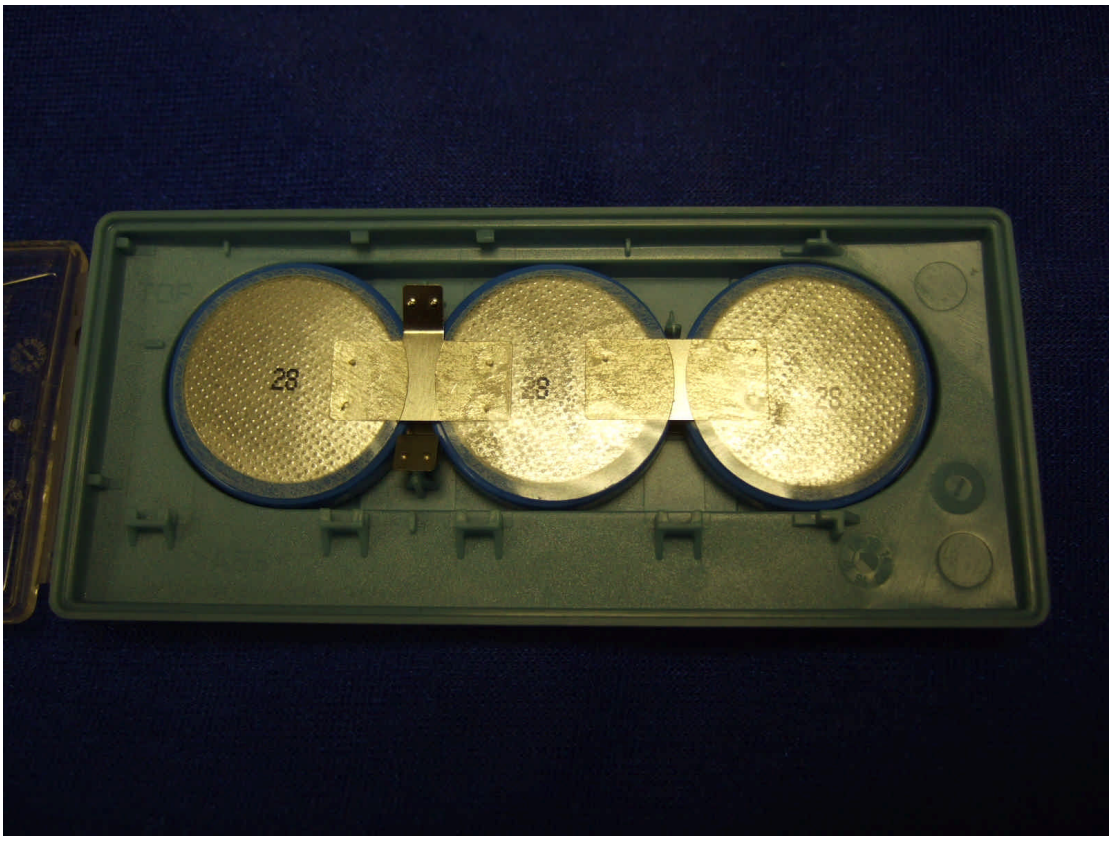
Identifying Photograph of the EUT

File name ZBD.5152-3.DOC
The contents of this report, apart from the referenced ANSI C63.4-2003, are beyond the scope of UKAS Testing Laboratory No. 2360 accreditation.





Internal Photographs of the EUT



Internal Photographs of the EUT

File name ZBD.5152-3.DOC
The contents of this report, apart from the referenced ANSI C63.4-2003, are beyond the scope of UKAS Testing Laboratory No. 2360 accreditation.

9. Signal Leads

The EUT has no signal leads/ports of any type.

10. Test Equipment Calibration list

The following table lists the test equipment used, last calibration date and calibration interval. All test equipment used has been maintained within the calibration requirements of ***R.N. Electronics Ltd.*** test facility quality system. Calibration intervals are regularly reviewed dependent on equipment manufacturer's recommendations and actual usage of the equipment.

RNNo	Model	Description	Manufacturer	Date Calibrated	Period
E268	BHA 9118	1-18 GHz Horn Antenna	Schaffner	14-Apr-11	60
E342	8563E	Spectrum Analyser 26.5 GHz	HP	29-Mar-11	24
E410	N5181A	3 GHz MXG Signal Generator	Agilent Technologies	26-Oct-11	12
E411	N9039A	9 kHz - 1 GHz RF Filter Section	Agilent Technologies	26-Oct-11	12
E412	E4440A	3 Hz - 26.5 GHz PSA	Agilent Technologies	26-Oct-11	12
TMS81	6502	Active Loop Antenna	EMCO	11-Sep-12	24
TMS82	8449B	Pre Amplifier 1 - 26 GHz	Agilent	14-Nov-11	12
TMS933	CBL6141A	Bilog Antenna 30MHz - 2GHz	York EMC	09-Sep-10	36

11. Auxiliary equipment

11.1 Auxiliary equipment supplied by ZBD Displays Ltd

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

Manufacturer	Description	Model Number	Serial Number
ZBD Displays Ltd	Bounce Communicator	2	ZR000624
Toshiba	Laptop PC & power supply	Satellite Pro	-

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

No RN Electronics ancillary equipment was supplied.

12. Modifications

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

12.1 Modifications before test

There were no modifications made by R.N. Electronics Ltd before testing commenced.

However, a power level setting of P6 was used for all tests at the instructions of ZBD Displays Ltd.

12.2 Modifications during test

There were no modifications made by R.N. Electronics Ltd during testing.

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:

CERTIFIED equipment – DoC not required.

14 Description of Test Sites

Site A	Radio / Calibration Laboratory and anechoic chamber
Site B	Semi-anechoic chamber
Site B1	Control Room for Site B
Site C	Transient Laboratory
Site D	Screened Room (Conducted Immunity)
Site E	Screened Room (Control Room for Site D)
Site F	Screened Room (Conducted Emissions) VCCI Registration No. C-2823
Site K	Screened Room (Control Room for Site M)
Site M	3m Semi-anechoic chamber (indoor OATS) FCC Registration No. 293246
Site Q	Fully-anechoic chamber
Site OATS	3m and 10m Open Area Test Site FCC Registration No. 293246 IC Registration No. 5612A-1 VCCI Registration No. R-2580
Site R	Screened Room (Conducted Immunity)
Site S	Safety Laboratory
Site T	Transient Laboratory

15 Abbreviations and Units

%	Percent
µV	microVolts
µW	microWatts
AC	Alternating Current
ALSE	Absorber Lined Screened Enclosure
AM	Amplitude Modulation
Amb	Ambient
ANSI	American National Standards Institute
ºC	Degrees Celsius
CFR	Code of Federal Regulations
CS	Channel Spacing
CW	Continuous Wave
dB	deciBels
dBµV	deciBels relative to 1µV
dBc	deciBels relative to Carrier
dBm	deciBels relative to 1mW
DC	Direct Current
EIRP	Equivalent Isotropic Radiated Power
ERP	Effective Radiated Power
EUT	Equipment Under Test
FCC	Federal Communications Commission
FM	Frequency Modulation
FSK	Frequency Shift Keying
g	Grams
GHz	GigaHertz
Hz	Hertz
IF	Intermediate Frequency
kHz	kiloHertz
LO	Local Oscillator
mA	milliAmps
max	maximum
mbar	milliBars
MHz	MegaHertz
min	minimum
mm	milliMetres
ms	milliSeconds
mW	milliWatts
NA	Not Applicable
nom	Nominal
nW	nanoWatt
OATS	Open Area Test Site
OFDM	Orthogonal Frequency Division Multiplexing
ppm	Parts per million
QAM	Quadrature Amplitude Modulation
QPSK	Quadrature Phase Shift Keying
Ref	Reference
RF	Radio Frequency
RTP	Room Temperature and Pressure
s	Seconds
Tx	Transmitter
V	Volts