



# **FCC 47CFR part 15C Test Report For epop300C**

Reference Standard: FCC 47CFR part 15C

Manufacturer: ZBD Displays Ltd

For type of equipment and serial number, refer to section 3

Report Number: 02-546/4945/2/12

Report Produced by: -

***R.N. Electronics Ltd.***

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## Certificate of Test 4945/2

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:	Epop300C
Model Number:	epop300C
Proposed FCC ID:	Not specified
Unique Serial Number:	FA00000008
Manufacturer:	ZBD Displays Ltd Building 3 Kingswood Kings Ride Ascot Berkshire SL5 8AD
Customer Purchase Order Number:	6329
Full measurement results are detailed in Report Number:	02-546/4945/2/12
Test Standards:	FCC 47CFR Part 15C effective date <b>October 1<sup>st</sup> 2011</b> , Class <b>DXT</b> Intentional Radiator

### 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 Directive, 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 one or more national authorities within the EU 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: 2nd February 2012

Test Engineer:

Approved By:  
Managing Director

Customer Representative:

File name QMF21-J ISSUE 3, FCCPART15.249, RNE ISSUE 01

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

**QMF21J – 3; 47CFR15C, RNE ISSUE 02 JAN 2012**

PAGE 2 OF 40

## 1. Contents

1.	Contents.....	3
2.	Summary of test results .....	4
3.	Equipment Under Test (EUT) .....	5
3.1	EQUIPMENT SPECIFICATION .....	5
3.2	EUT CONFIGURATIONS FOR TESTING .....	5
3.3	EUT MODES .....	6
3.4	Emissions Configuration .....	7
4.	Specifications .....	8
4.1	DEVIATIONS.....	8
4.2	TESTS AT EXTREMES OF TEMPERATURE & VOLTAGE .....	8
	Test fixture/ Antenna configuration .....	8
4.3	MEASUREMENT UNCERTAINTIES .....	8
5.	Tests, Methods and Results .....	9
5.1	CONDUCTED EMISSIONS .....	9
5.2	INTENTIONAL RADIATOR FIELD STRENGTH .....	10
5.3	RADIATED EMISSIONS .....	11
5.4	FREQUENCY STABILITY .....	14
5.5	OCCUPIED BANDWIDTH AND BAND EDGE .....	15
5.6	DUTY CYCLE.....	16
6.	Plots and Results .....	16
6.1	CONDUCTED EMISSIONS .....	16
6.2	RADIATED EMISSIONS 30MHz – 1GHz .....	17
6.3	RADIATED EMISSIONS ABOVE 1GHz .....	19
6.4	20dB BANDWIDTH .....	24
6.5	BAND EDGE COMPLIANCE .....	26
7	Explanatory Notes .....	28
7.1	EXPLANATION OF TABLE OF SIGNALS MEASURED .....	28
7.2	EXPLANATION OF LIMIT LINE CALCULATIONS FOR RADIATED MEASUREMENTS .....	28
8.	Photographs .....	29
9.	Signal Leads .....	34
10.	Test Equipment Calibration list .....	35
11.	Auxiliary equipment .....	36
11.1	AUXILIARY EQUIPMENT SUPPLIED BY ZBD DISPLAYS LTD .....	36
11.2	AUXILIARY EQUIPMENT SUPPLIED BY RN ELECTRONICS LIMITED .....	36
12.	Modifications .....	37
12.1	MODIFICATIONS BEFORE TEST.....	37
12.2	MODIFICATIONS DURING TEST .....	37
13.	Compliance information.....	38
14	Description of Test Sites.....	39
15	Abbreviations and Units.....	40

## 2. Summary of test results

The epop300C 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 <sup>1</sup>
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 <sup>2</sup>
5. Occupied bandwidth and band edge	ANSI C63.10 §6.9.	PASSED
6. Duty cycle	ANSI C63.10 §7.5.	NOT APPLICABLE <sup>3</sup>

<sup>1</sup> EUT does not operate from the AC power lines nor contain provisions for operation while connected to AC power lines.

<sup>2</sup> EUT is not for fixed, point-to-point operation, therefore no limits are specified.

<sup>3</sup> 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	epop300C
Proposed FCC ID	Not specified
Serial Number of EUT	FA00000008
Date when equipment was received by RN Electronics	2nd February 2012
Date of test:	2nd February 2012
Customer order number:	6329
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:	an electronic shelf edge label.
Height	61 mm
Width	118 mm
Depth	21 mm
Weight	0.2 g
Voltage	4.5 V DC Battery
Current required from above voltage source	Not specified.

#### 3.2 EUT Configurations for testing

Frequency range	902.5 – 927.5 MHz
Normal use position	Shelf edge
Normal test signals	GFSK (38.4kBaud)
Declared power level	+10dBm
Declared channel bandwidth	80kHz
Highest frequency generated / used	927.5 MHz
Lowest frequency generated / used	902.5 MHz

### 3.3 EUT Modes

Mode	Description of mode	Used for Testing
CW transmission	Continuous transmit without modulation	YES
Constant transmission Data	Continuous transmit with constant modulation	YES
TX Packet burst	Repeated transmissions once a second of packet data	YES
Receive/Standby	EUT sitting in receive/standby mode	YES

Further to & in combination with the modes of operation listed above are the Channel frequencies the unit was operated on for purposes of test. These are:-

Channel frequency	EUT Channel number
902.5 MHz	11
915.0 MHz	36
927.5 MHz	61

For the purpose of tests the EUT was set to a power setting of P6 for All channels and tests.

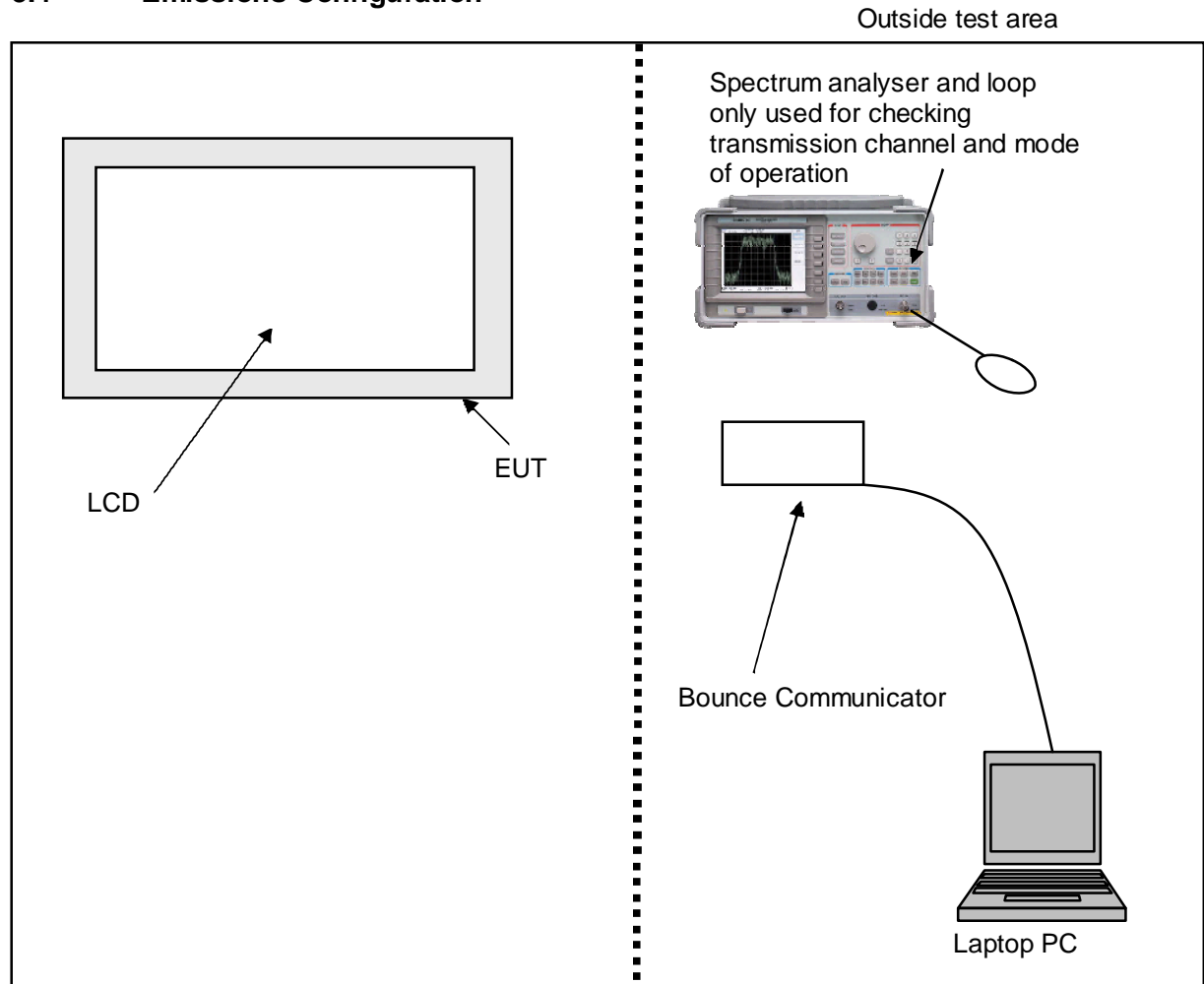
The applicant has declared a total of 51 channels in the 902-928MHz band (plus a further 10 channels in the 868MHz band not tested here as these are for use outside of the USA).

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: 24 February 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 placed by the Bounce Communicator for programming of channels and modes, and once programmed the EUT was placed back into the test area.

The spectrum analyser was only used to ensure the correct operating channel and modes of operation were programmed by detecting the RF carrier signal. Power level settings for tests were as described in section 3.3.

Bottom, middle & top channels were selected for tests where appropriate in combination with the above mentioned modes. These were:-

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

The EUT had no ports of any kind available to the end user.

## 4. Specifications

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

No tests were required to be performed at extremes of temperature.

### Test fixture/ Antenna configuration

- ☐ 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 integral Antenna was used for testing.

### 4.3 Measurement Uncertainties

Parameter	Uncertainty
Transmitter Tests	
Bandwidth	<± 1.9 %
Radiated RF Power	<± 3.5 dB
Radiated Spurious Emissions	<± 3.4 dB
H-Field Emissions	<± 2.8 dB
Spectrum Mask	<± 4.1 dB
Receiver Tests	
Radiated Spurious Emissions	<± 3.4 dB



## **5. Tests, Methods and Results**

### **5.1 Conducted emissions**

Test not applicable, EUT is battery powered only.

## 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 at Power level P6 in **Constant transmission data** mode on the top, middle and bottom channels as stated in 3.3.

#### 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 its antenna were rotated 360° to record the maximised emission.

### 5.2.2 Test results

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

#### Test Environment:

Temperature: 15°C Humidity: 26 %

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

Channel	Measured result PK (dBuV/m @3m)	EUT polarisation	Measurement polarisation
902.5MHz	92.8	Long side Vertically upright	Vertical
915MHz	93.8	Horizontally flat	Horizontal
927.5MHz	93.7	Horizontally flat	Horizontal

#### LIMITS:

15.249(a) 50 mV/m @ 3m (94 dBuV/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. Radiated Emissions testing was performed with new batteries. The EUT was rotated in all three orthogonal planes. The EUT was operated at Power level P6 in **Constant transmission data** mode on the top, middle and bottom channels as stated in 3.3.

#### **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 final measurements 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.

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.

At least 6 signals within 20dB and all signals within 10dB of the limit were investigated.

### **5.3.2 Test results**

Tests were performed using Test Site M.

#### **Test Environment: M**

Temperature: 15-19°C

Humidity: 25-26%

Analyser plots for the Quasi-Peak / Average values as applicable can be found in Section 6.2 of this report. Band Edge Compliance plots can be found in section 6.6 of this report.

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

## Tables of signals within 20dB of the limits for emissions below 1GHz

### Bottom Channel Horizontal

Signal No.	Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	QP - Lim1 (dB)
1	889.505	42.6	40.5	-5.5
2	915.505	41.4	38.9	-7.1

### Bottom Channel vertical

Signal No.	Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	QP - Lim1 (dB)
1	889.505	46.4	45.1	-0.9
2	915.505	43.0	40.9	-5.1

### Middle Channel Horizontal

Signal No.	Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	QP - Lim1 (dB)
1	797.720	34.7	28.2	-17.8
2	863.005	39.5	36.2	-9.8
3	902.005	46.7	45.2	-0.8
4	928.005	45.4	43.5	-2.5
5	938.380	36.5	30.7	-15.3

### Middle Channel Vertical

Signal No.	Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	QP - Lim1 (dB)
1	646.030	32.3	26.6	-19.4
2	863.005	39.2	35.8	-10.2
3	902.005	45.9	44.4	-1.6
4	928.005	45.3	43.5	-2.5

### Top Channel Horizontal

Signal No.	Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	QP - Lim1 (dB)
1	875.505	39.6	36.2	-9.8
2	914.505	46.6	45.2	-0.8
3	940.505	43.9	41.6	-4.4

### Top Channel Vertical

Signal No.	Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	QP - Lim1 (dB)
1	875.505	39.3	36.3	-9.7
2	914.505	45.9	44.2	-1.8
3	940.505	45.2	42.7	-3.3

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**QMF21J – 3; 47CFR15C, RNE ISSUE 02 JAN 2012**

PAGE 12 OF 40

## Tables of signals within 20dB of the limits for emissions above 1GHz

### Bottom Channel Horizontal

Signal No.	Freq (MHz)	Peak Amp (dBuV)	PK - Lim1 (dB)	AV Amp (dBuV)	AV - Lim1 (dB)
1	1805.010	51.2	-22.8	49.7	-4.3
2	2707.515	42.1	-31.9	35.5	-18.5
3	4512.520	43.5	-30.5	34.0	-20.0
4	5415.029	49.5	-24.5	42.3	-11.7

### Bottom Channel Vertical

Signal No.	Freq (MHz)	Peak Amp (dBuV)	PK - Lim1 (dB)	AV Amp (dBuV)	AV - Lim1 (dB)
1	1805.010	50.8	-23.2	49.2	-4.8
2	2707.515	40.1	-33.9	31.5	-22.5
3	4512.524	45.7	-28.3	37.8	-16.2
4	5415.029	47.3	-26.7	39.2	-14.8

### Middle Channel Horizontal

Signal No.	Freq (MHz)	Peak Amp (dBuV)	PK - Lim1 (dB)	AV Amp (dBuV)	AV - Lim1 (dB)
1	1830.010	45.9	-28.1	43.5	-10.5
2	2745.015	42.9	-31.1	36.4	-17.6
3	4575.024	44.7	-29.3	35.1	-18.9
4	5490.030	48.4	-25.6	42.2	-11.8

### Middle Channel Vertical

Signal No.	Freq (MHz)	Peak Amp (dBuV)	PK - Lim1 (dB)	AV Amp (dBuV)	AV - Lim1 (dB)
1	1830.010	47.2	-26.8	45.0	-9.0
2	2745.015	41.6	-32.4	34.5	-19.5
3	4575.025	45.6	-28.4	37.5	-16.5
4	5490.031	48.6	-25.4	42.4	-11.6
5	6405.034	48.8	-25.2	40.1	-13.9

### Top Channel Horizontal

Signal No.	Freq (MHz)	Peak Amp (dBuV)	PK - Lim1 (dB)	AV Amp (dBuV)	AV - Lim1 (dB)
1	1855.010	44.5	-29.5	40.4	-13.6
2	2782.514	46.9	-27.1	42.7	-11.3
3	4637.516	45.4	-28.6	36.0	-18.0
4	5565.028	47.2	-26.8	39.3	-14.7

### Top Channel Vertical

Signal No.	Freq (MHz)	Peak Amp (dBuV)	PK - Lim1 (dB)	AV Amp (dBuV)	AV - Lim1 (dB)
1	1855.010	46.8	-27.2	44.2	-9.8
2	2782.515	44.7	-29.3	39.5	-14.5
3	4637.525	46.1	-27.9	38.1	-15.9
4	5565.029	47.8	-26.2	40.0	-14.0

### 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  $\mu\text{V/m}$  @ 3m (54dBuV/m @ 3m).  
15.249(d) other emissions, outside the intentional band, must be attenuated by at least 50dB from the level of the fundamental or meet the general limits of 15.209 whichever is the lesser attenuation.

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**QMF21J – 3; 47CFR15C, RNE ISSUE 02 JAN 2012**

PAGE 13 OF 40

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**

E410, E411, E412, TMS933, E268, TMS82

See Section 10 for more details

#### **5.4 Frequency stability**

Test not applicable, EUT is not for fixed, point-to-point operation, therefore no limits are specified.

## 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 placed in a calibrated test fixture. The EUT was operated at Power level P6 in **Constant transmission data** mode on the top, middle and bottom channels as stated in 3.3.

#### 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 **B**.

Temperature of test Environment: 22°C

Analyser plots for the 20dB bandwidth can be found in Section 6.5 of this report.

Channel	Result	Plot reference
Bottom	65.25 kHz	J4945-2 bottom channel 20dB BW
Middle	64.50 kHz	J4945-2 middle channel 20dB BW
Top	64.50 kHz	J4945-2 top channel 20dB BW

Delta Marker method results

Channel	PK power measured (100k RBW)	Marker Delta ratio (10k RBW)	Result	Plot reference
Bottom	92.8 dBuV/m	49.6dB	43.1 dBuV/m	J4945-2 bottom channel Band edge 10k RBW delta Mrkr J4945-2 bottom channel Band edge 100k RBW
Top	93.7 dBuV/m	49.7dB	44.0 dBuV/m	J4945-2 top channel Band edge 10k RBW delta Mrkr J4945-2 top channel Band edge 100k RBW

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. See section 6.5 of this report.

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

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**QMF21J – 3; 47CFR15C, RNE ISSUE 02 JAN 2012**

PAGE 15 OF 40

#### **5.5.2.1 Test Equipment used**

E001

See Section 10 for more details.

#### **5.6 Duty cycle**

Test not applicable, No limits apply.

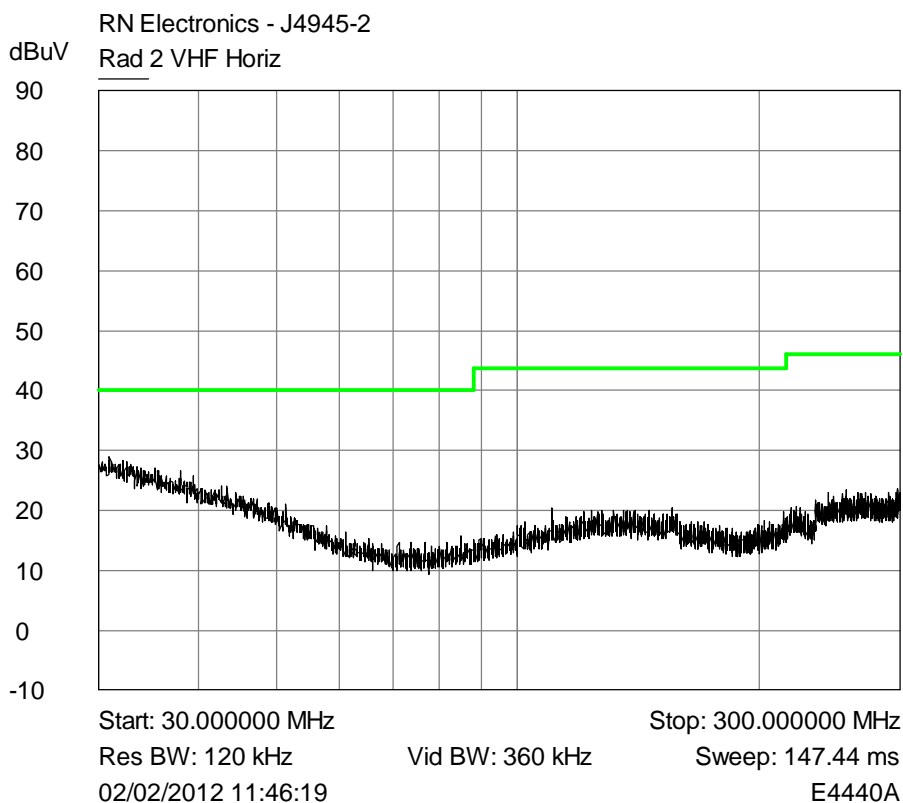
### **6. Plots and Results**

#### **6.1 Conducted Emissions**

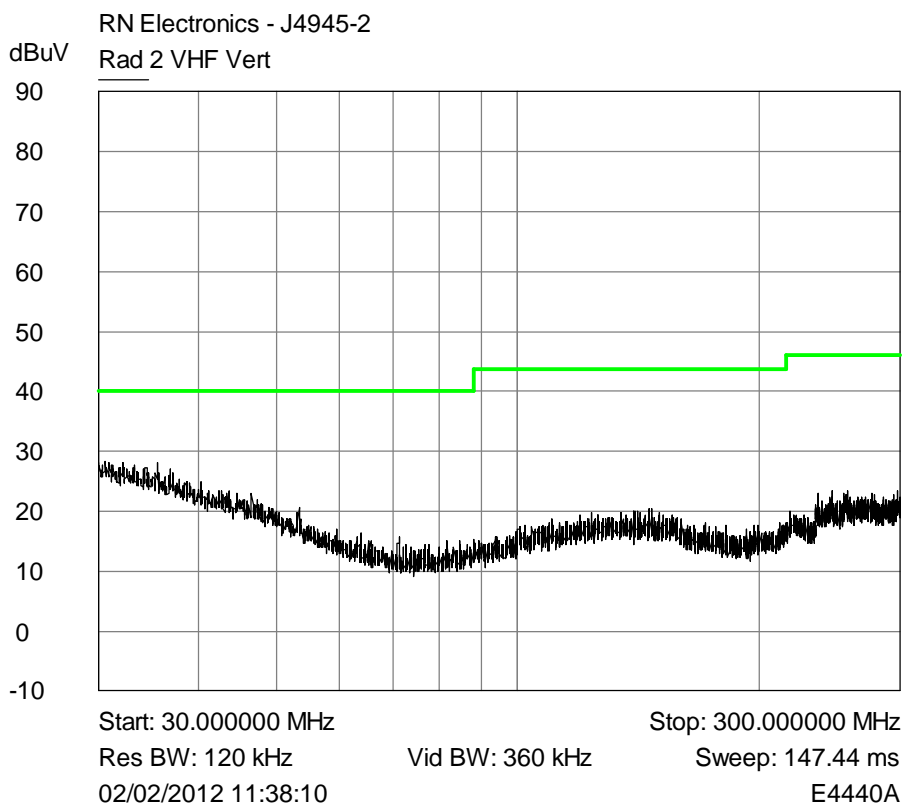
Test not applicable, EUT is battery powered only.



## 6.2 Radiated Emissions 30MHz – 1GHz



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



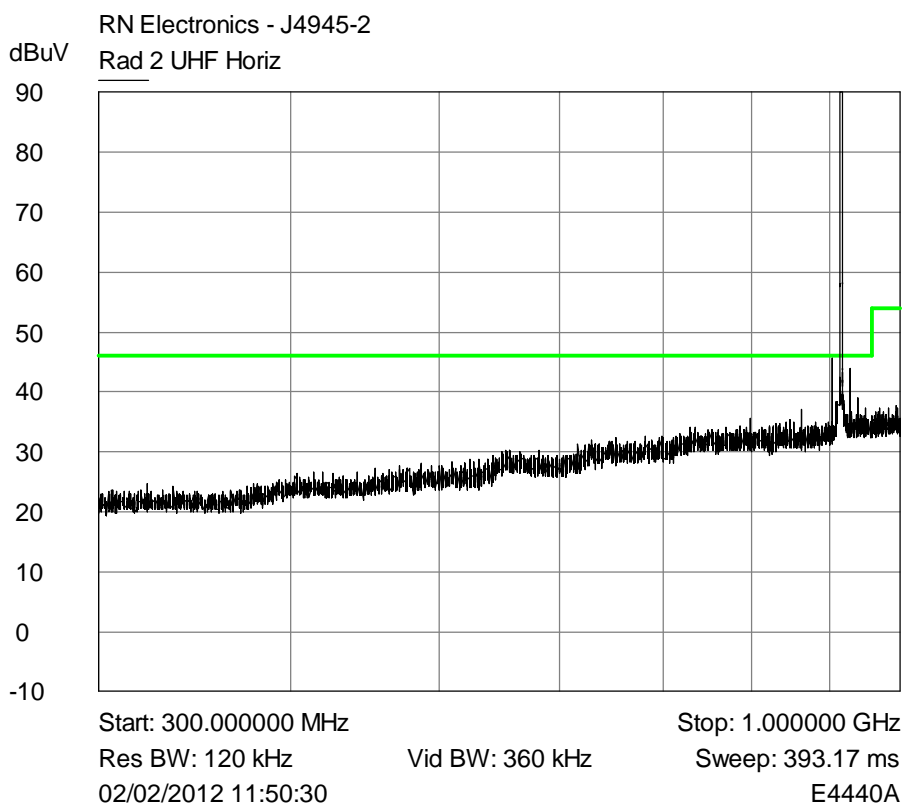
**Plot of peak vertical emissions 30MHz - 300MHz against the quasi-peak limit line.**

File name QMF21-J ISSUE 3, FCCPART15.249, RNE ISSUE 01

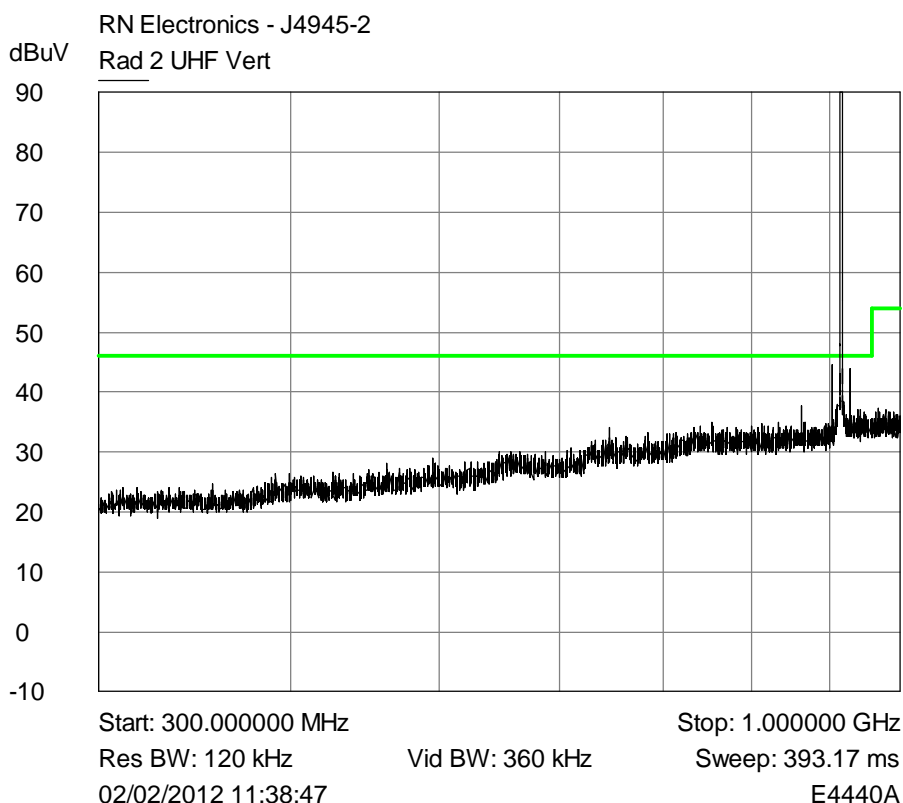
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**QMF21J – 3; 47CFR15C, RNE ISSUE 02 JAN 2012**

PAGE 17 OF 40



**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.**

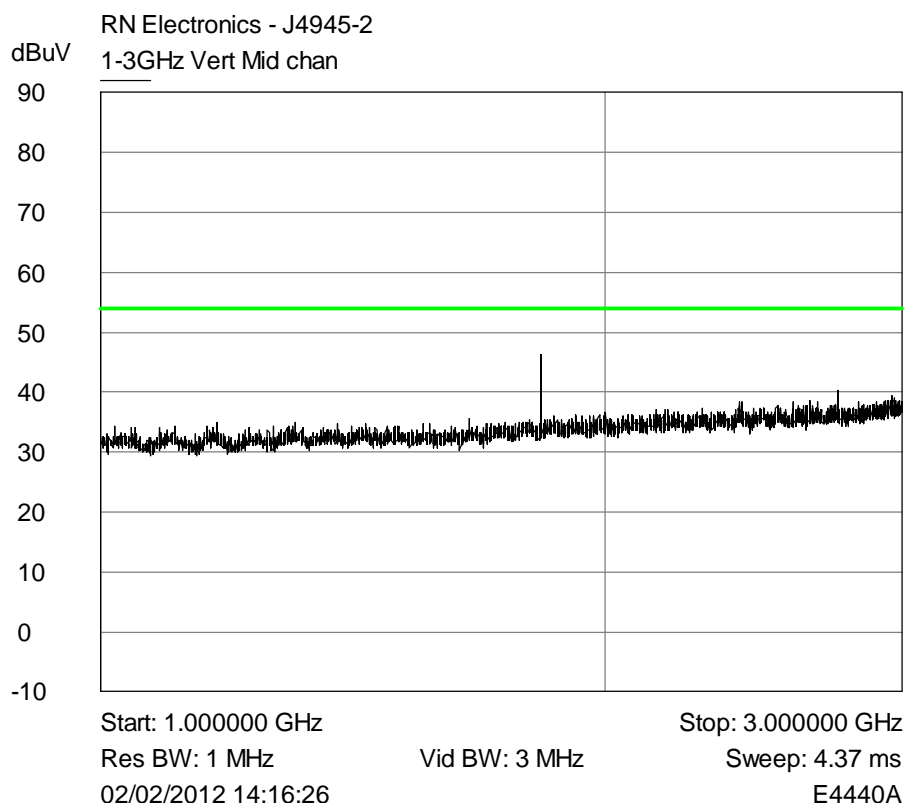
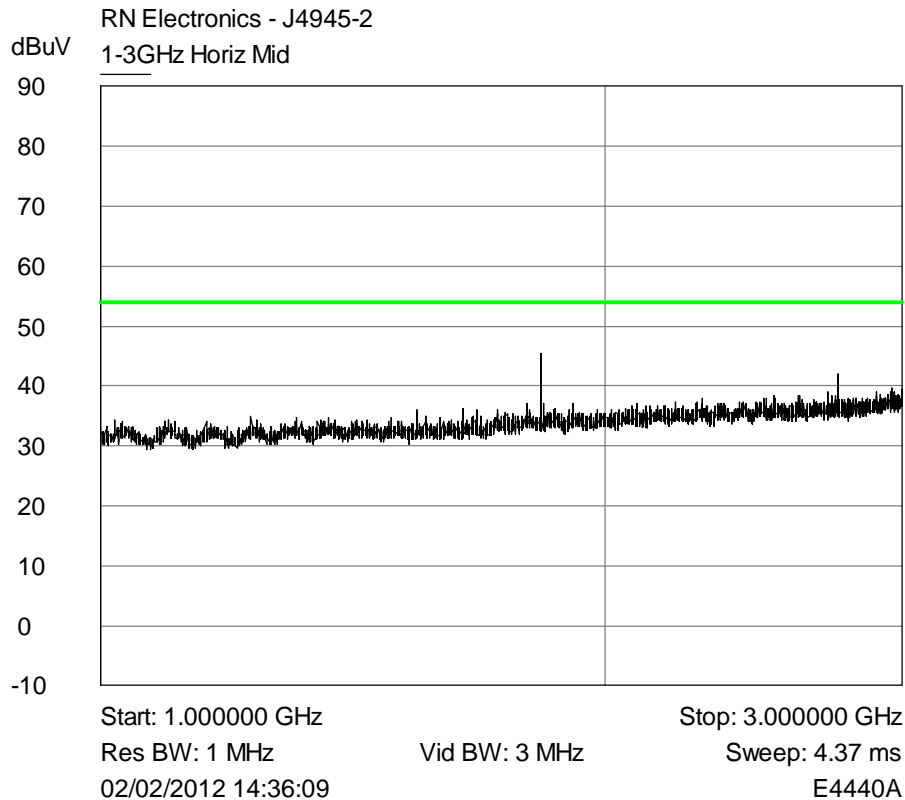
File name QMF21-J ISSUE 3, FCCPART15.249, RNE ISSUE 01

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**QMF21J – 3; 47CFR15C, RNE ISSUE 02 JAN 2012**

PAGE 18 OF 40

### 6.3 Radiated Emissions above 1GHz

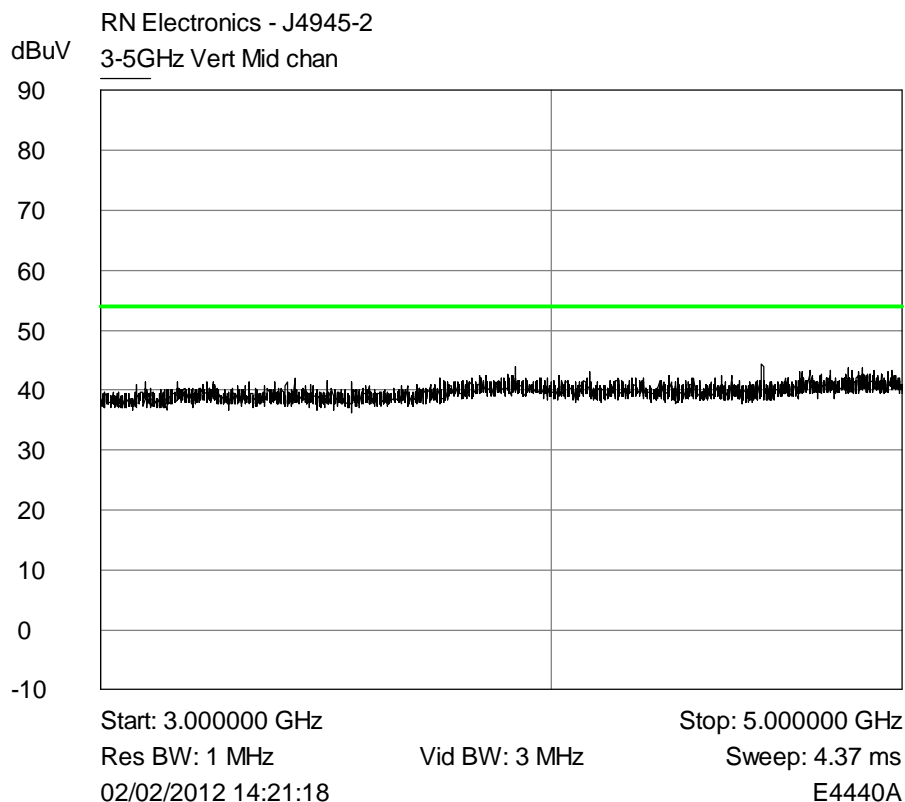
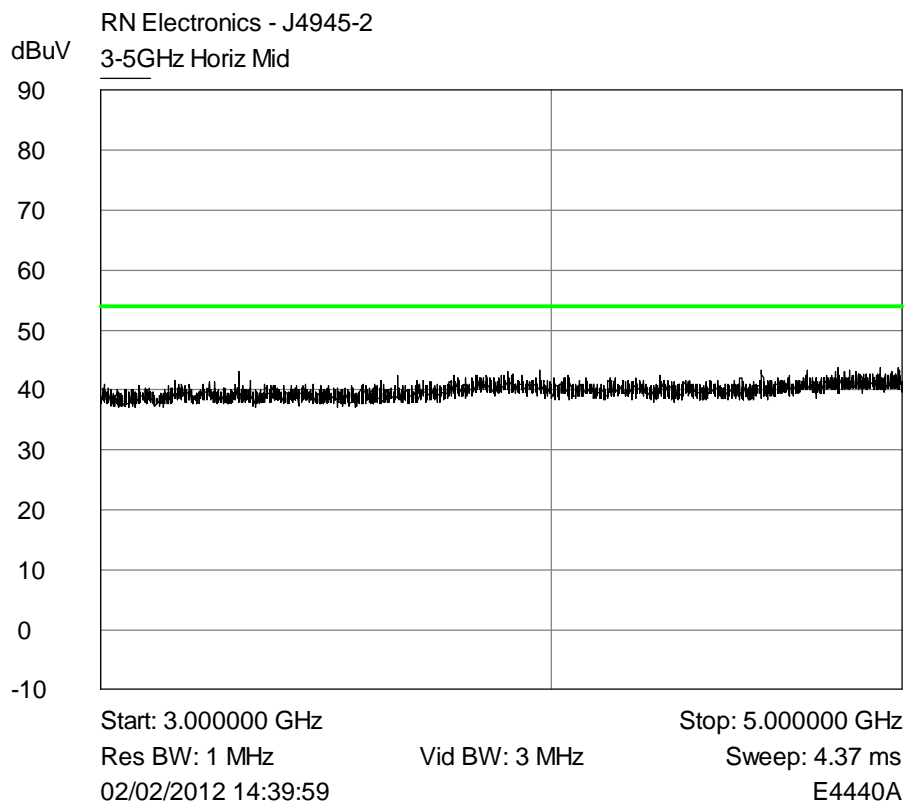


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**QMF21J – 3; 47CFR15C, RNE ISSUE 02 JAN 2012**

PAGE 19 OF 40

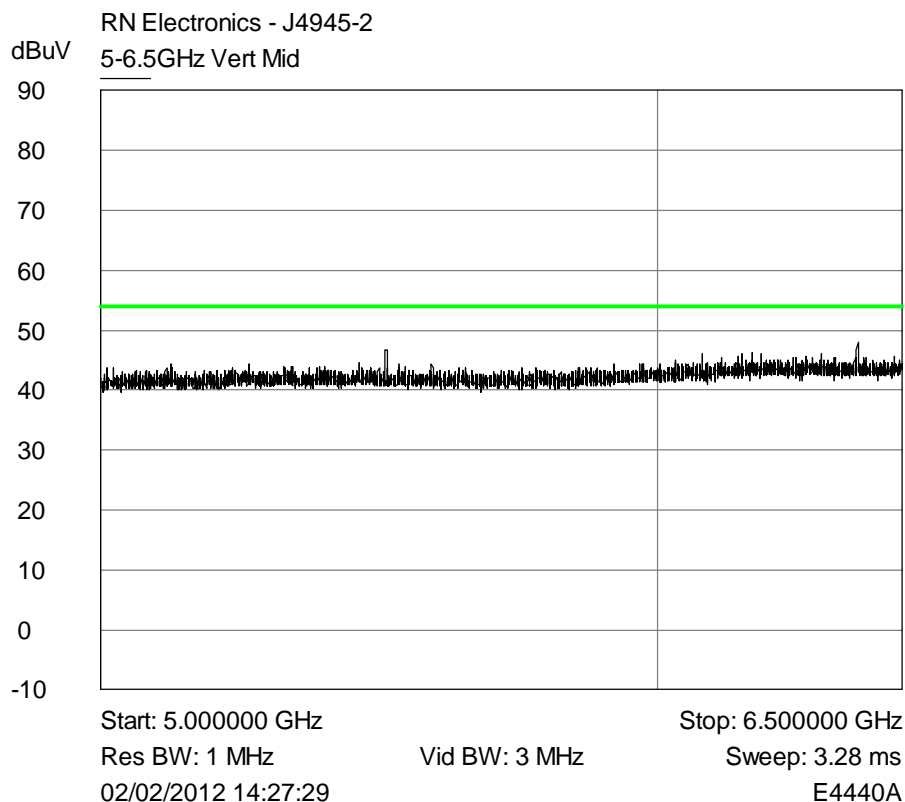
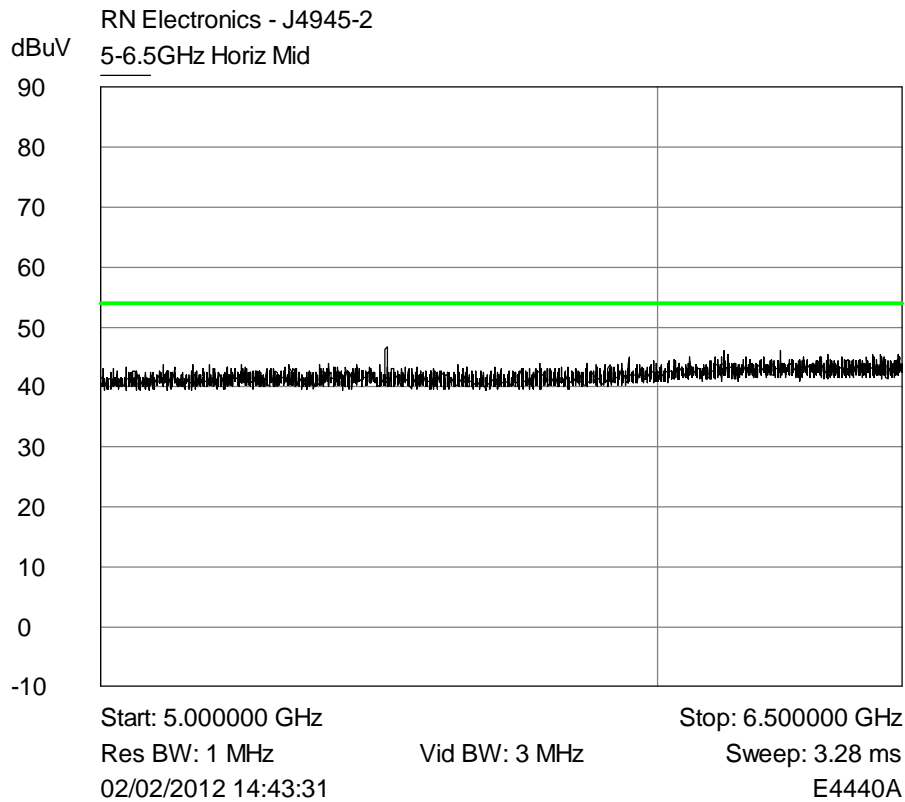


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**QMF21J – 3; 47CFR15C, RNE ISSUE 02 JAN 2012**

PAGE 20 OF 40

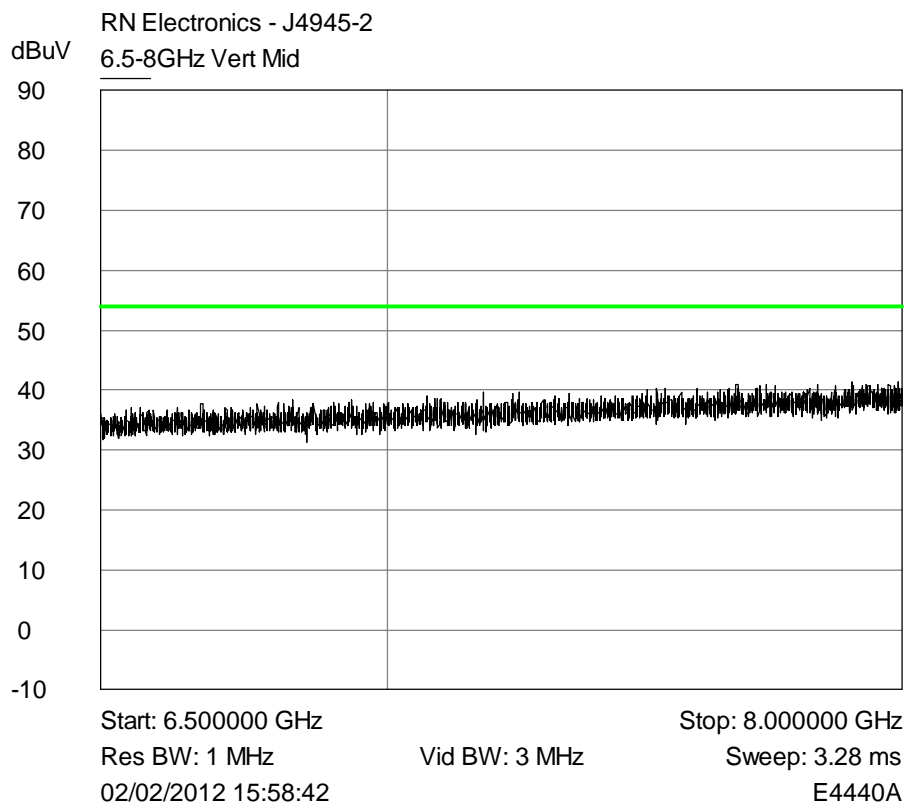
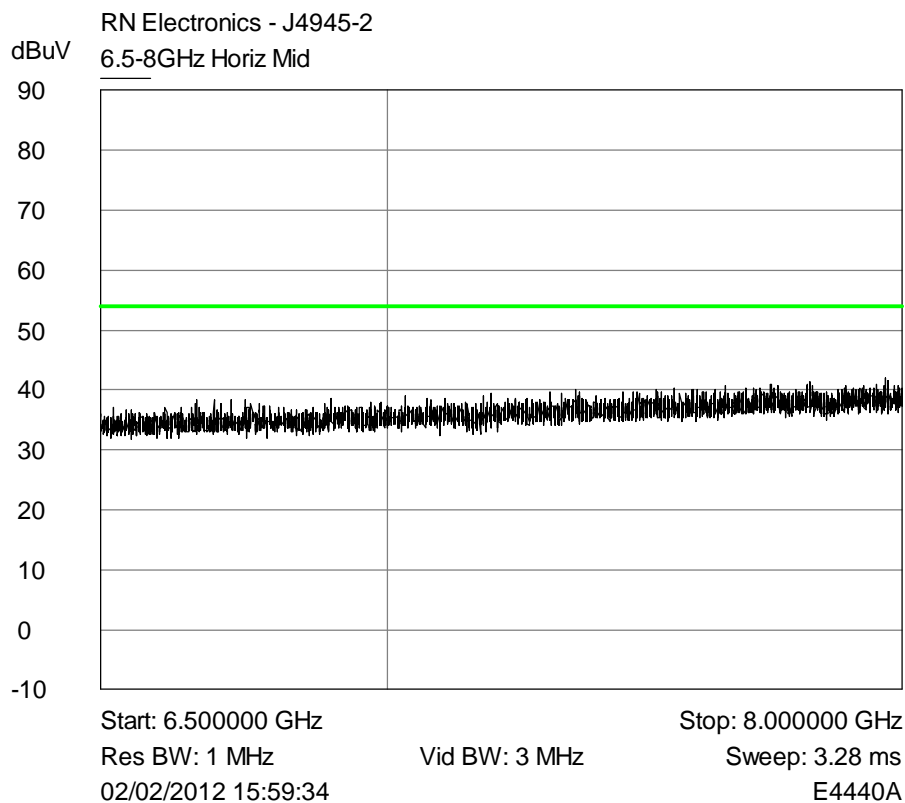


File name QMF21-J ISSUE 3, FCCPART15.249, RNE ISSUE 01

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**QMF21J – 3; 47CFR15C, RNE ISSUE 02 JAN 2012**

PAGE 21 OF 40

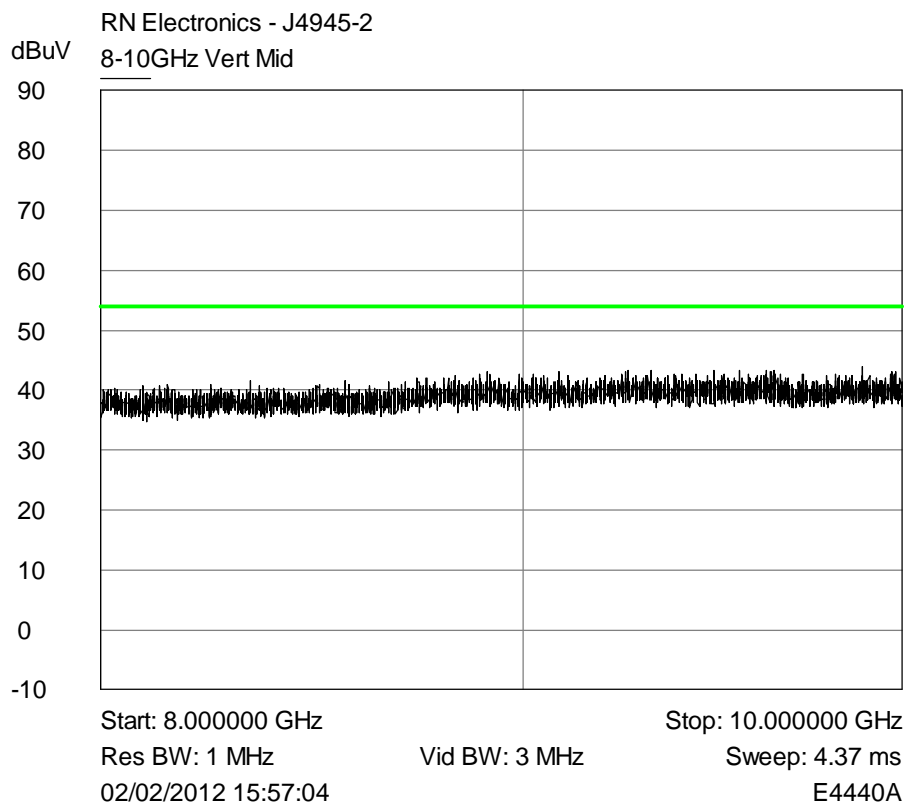
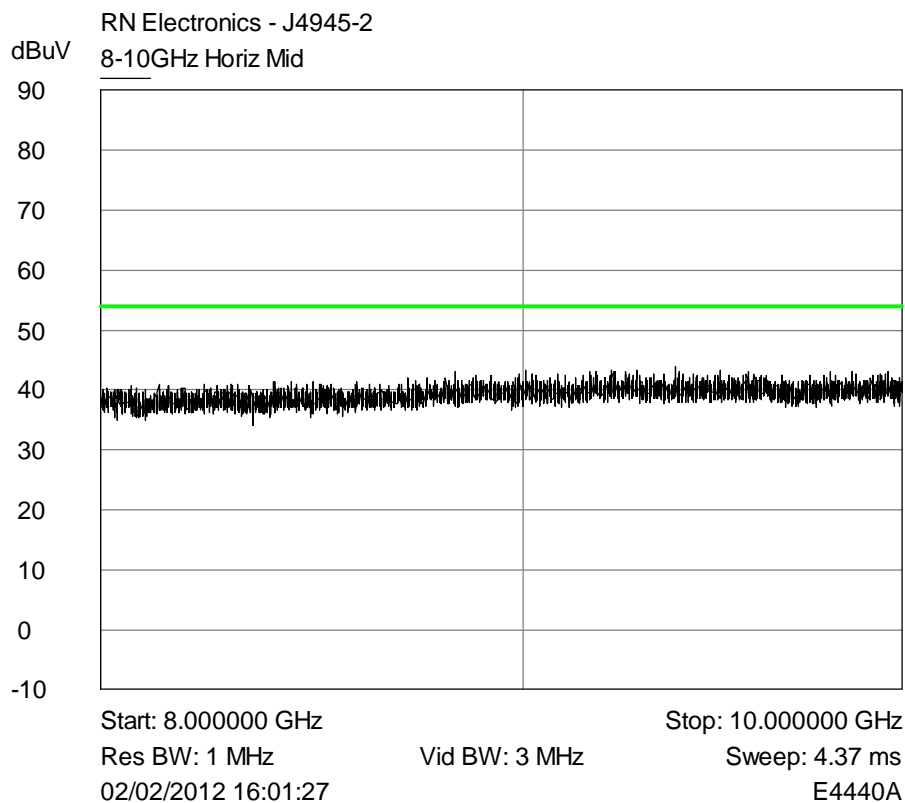


File name QMF21-J ISSUE 3, FCCPART15.249, RNE ISSUE 01

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**QMF21J – 3; 47CFR15C, RNE ISSUE 02 JAN 2012**

PAGE 22 OF 40



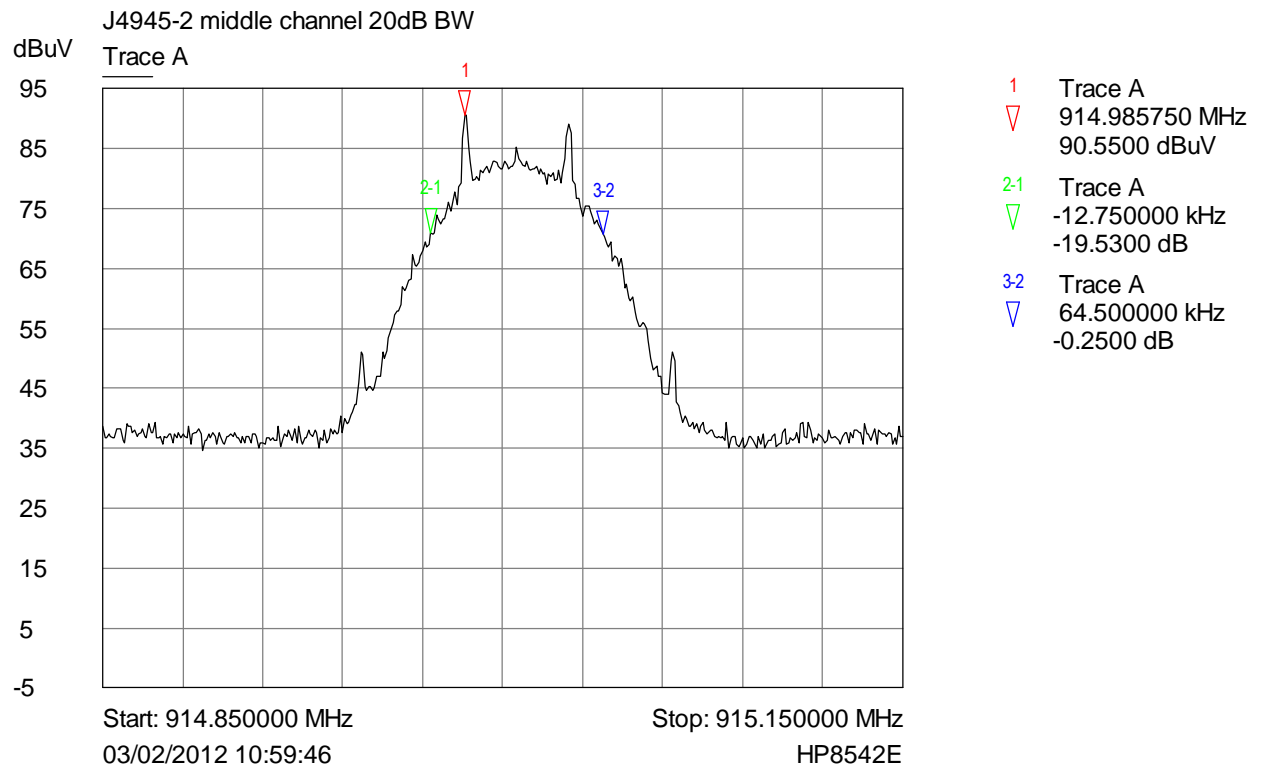
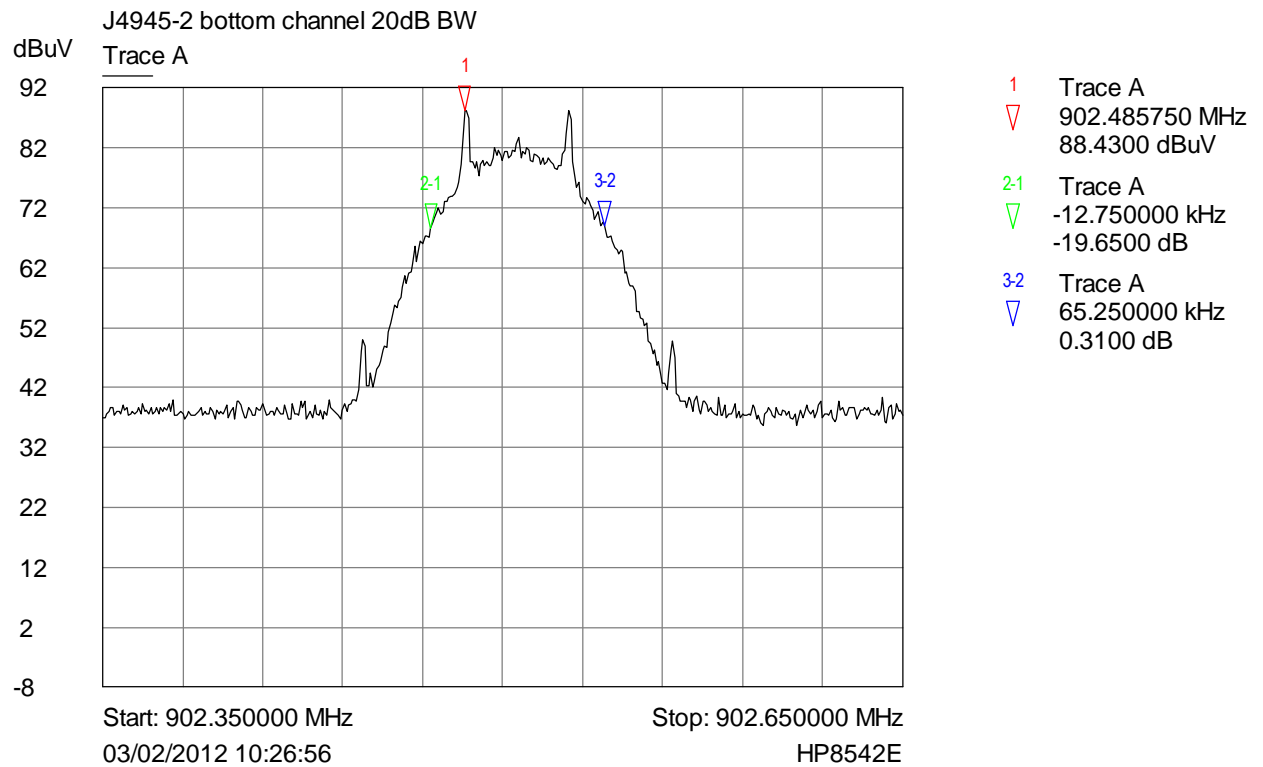
File name QMF21-J ISSUE 3, FCCPART15.249, RNE ISSUE 01

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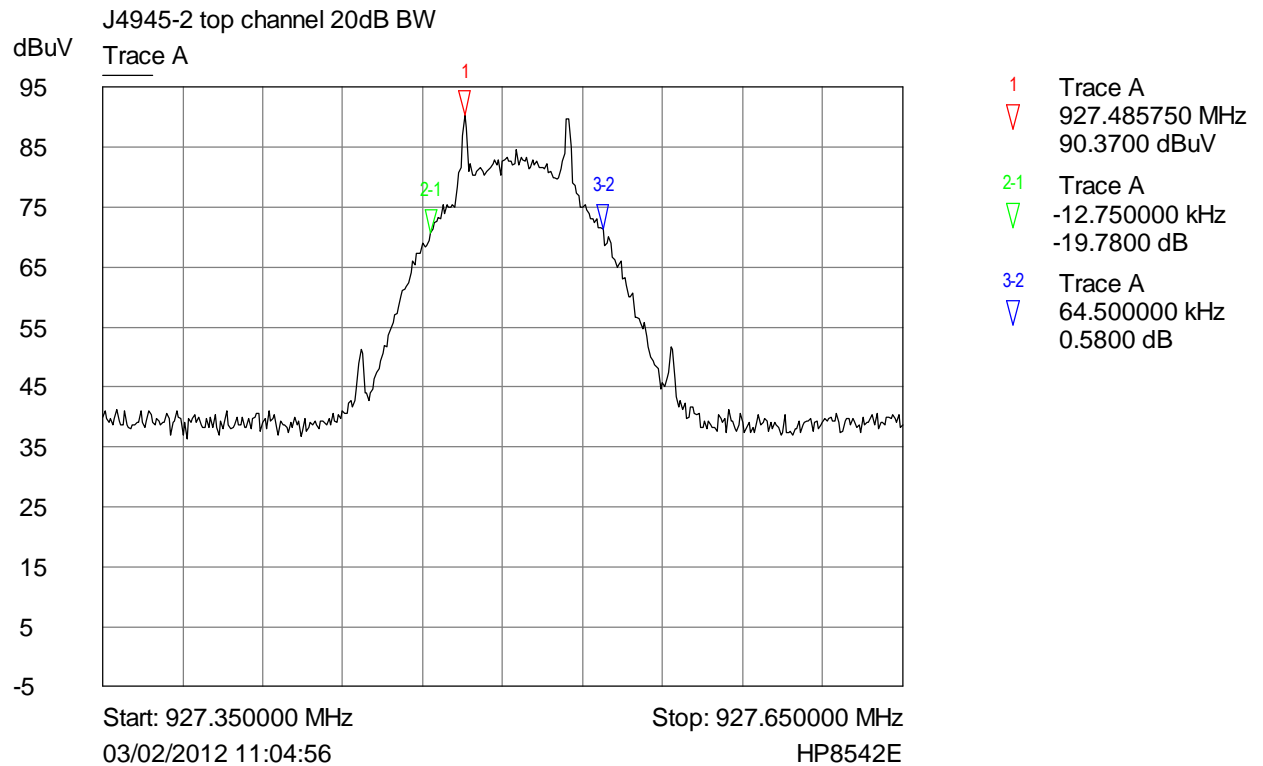
**QMF21J – 3; 47CFR15C, RNE ISSUE 02 JAN 2012**

PAGE 23 OF 40

## 6.4 20dB Bandwidth

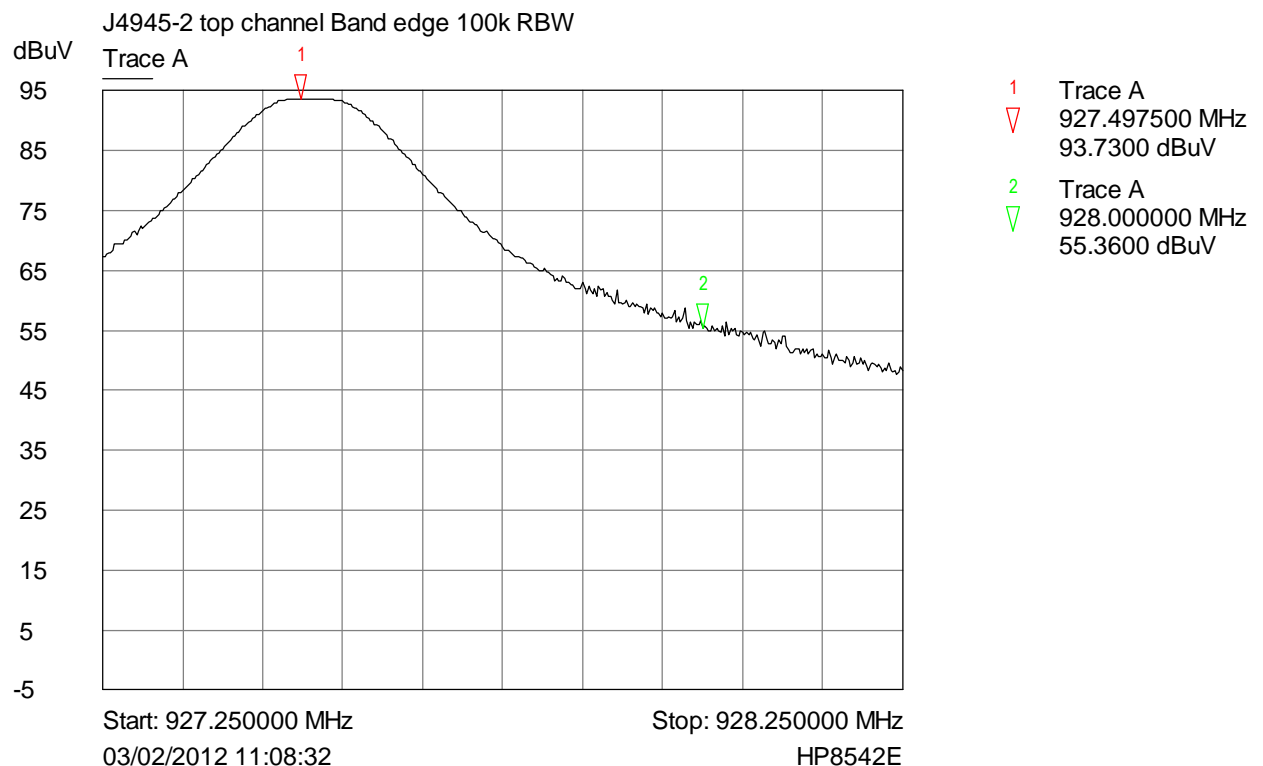
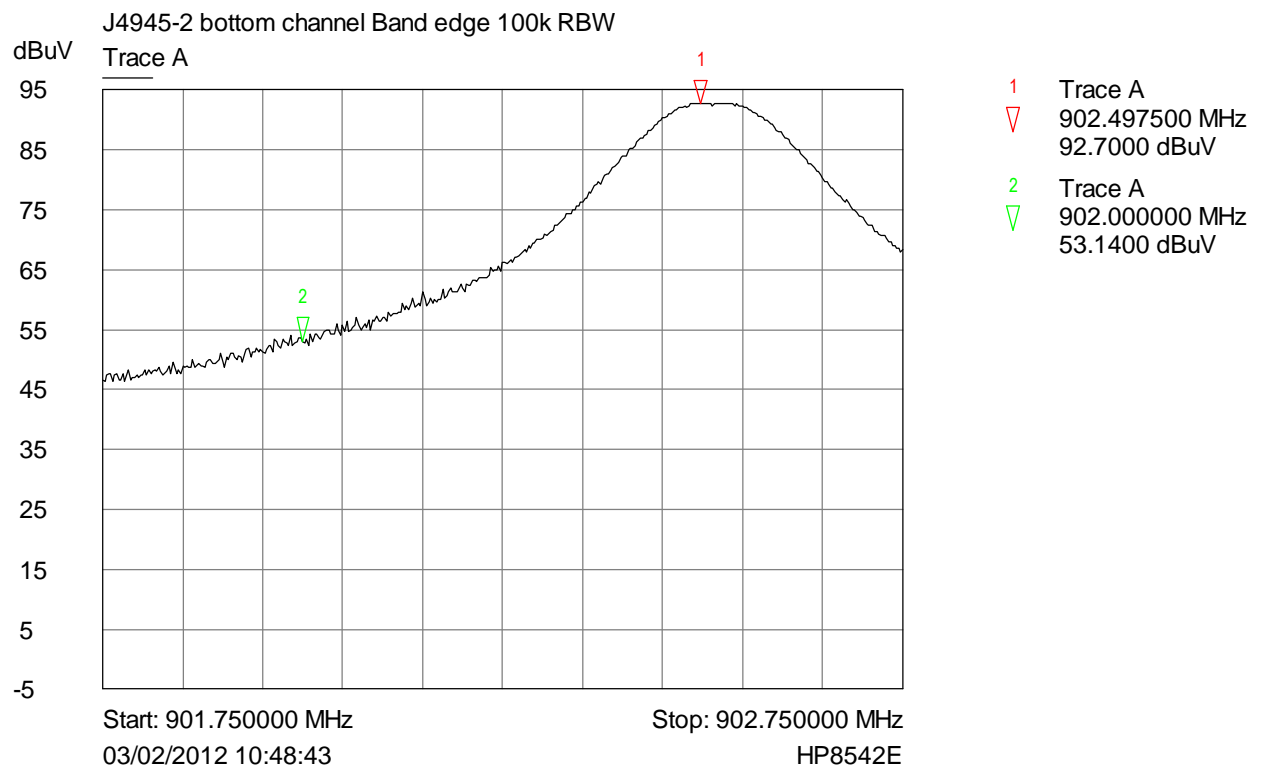






## 6.5 Band Edge Compliance

### Band Edge/ Restricted band edge.



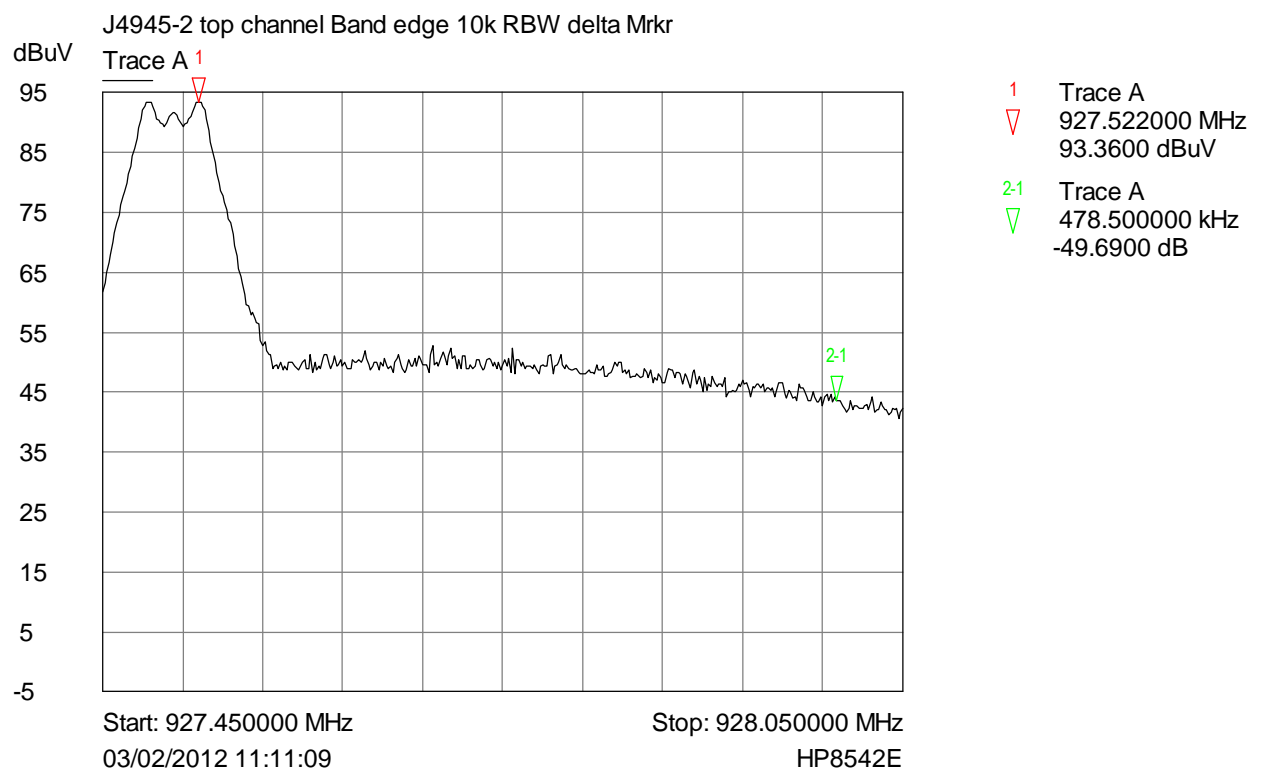
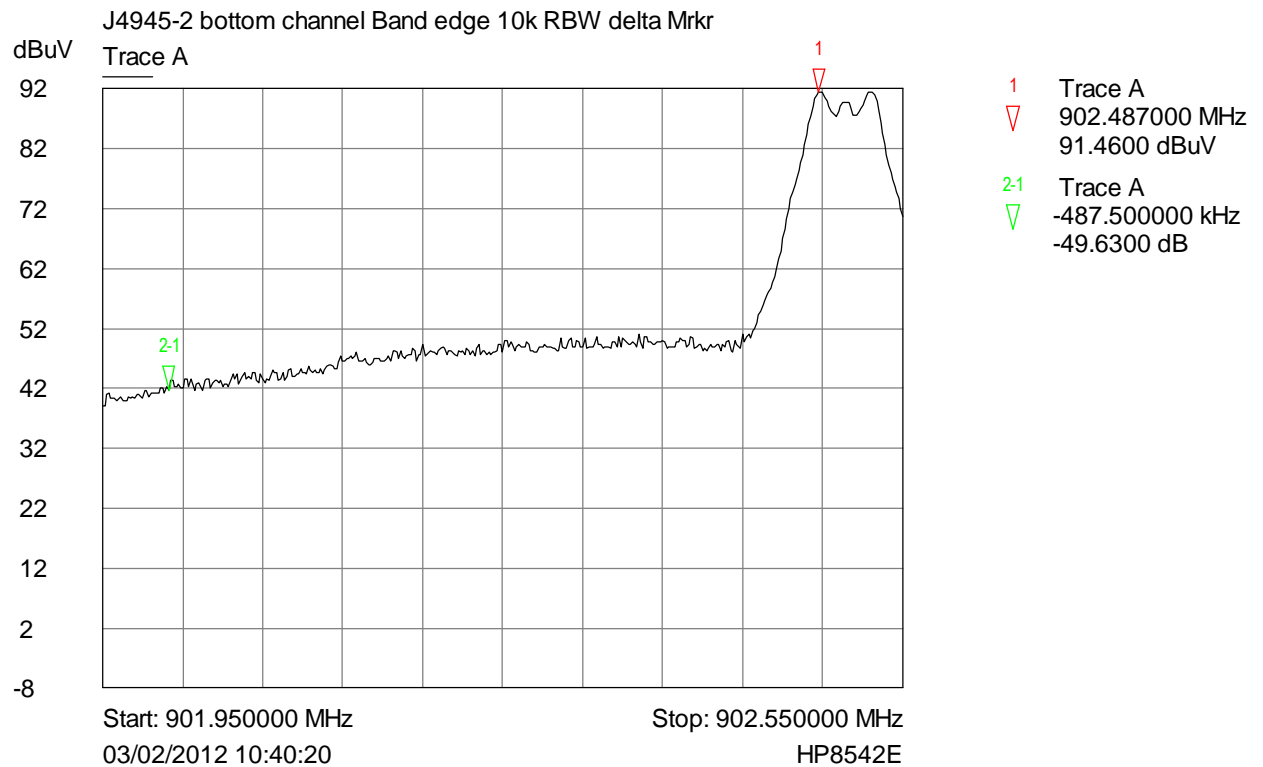
File name QMF21-J ISSUE 3, FCCPART15.249, RNE ISSUE 01

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**QMF21J – 3; 47CFR15C, RNE ISSUE 02 JAN 2012**

PAGE 26 OF 40

# Delta Marker Method Plots.



File name QMF21-J ISSUE 3, FCCPART15.249, RNE ISSUE 01

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**QMF21J – 3; 47CFR15C, RNE ISSUE 02 JAN 2012**

PAGE 27 OF 40

## 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 (dBμV)	Pk – Lim 1 (dB)	QP Amp (dBμV)	QP - Lim1 (dB)	Av Amp (dBμV)	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:

- limit of 500 μV/m equates to  $20.\log(500) = 54$  dB μV/m.
- limit of 300 μV/m at 10m equates to  $20.\log(300 \cdot 10/3) = 60$  dB μV/m at 3m
- 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).

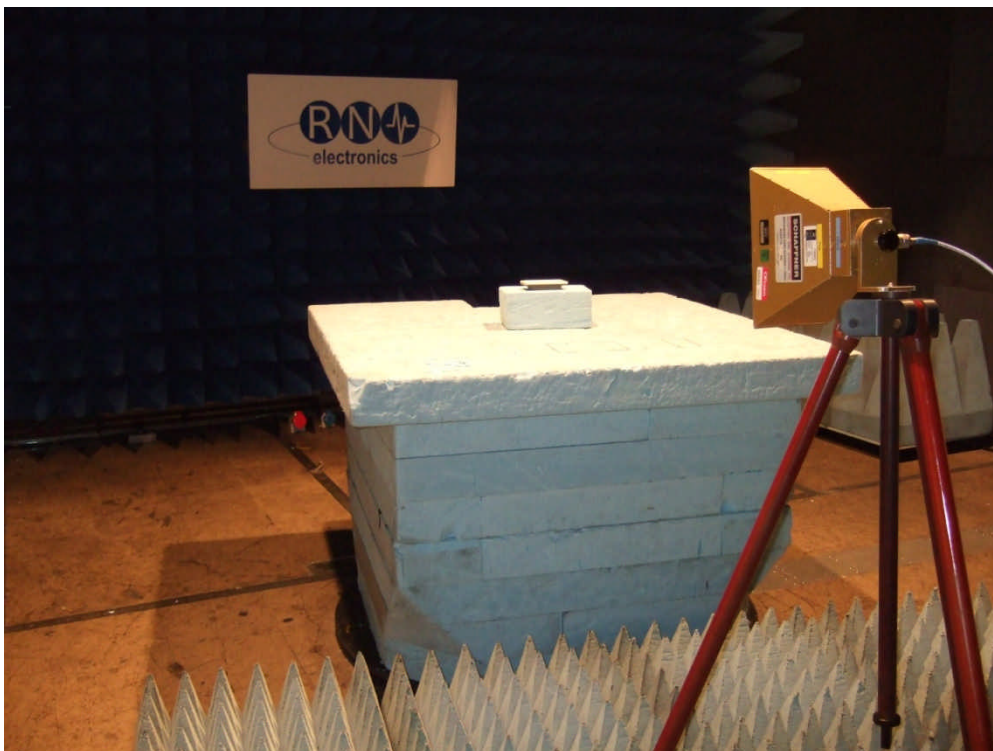
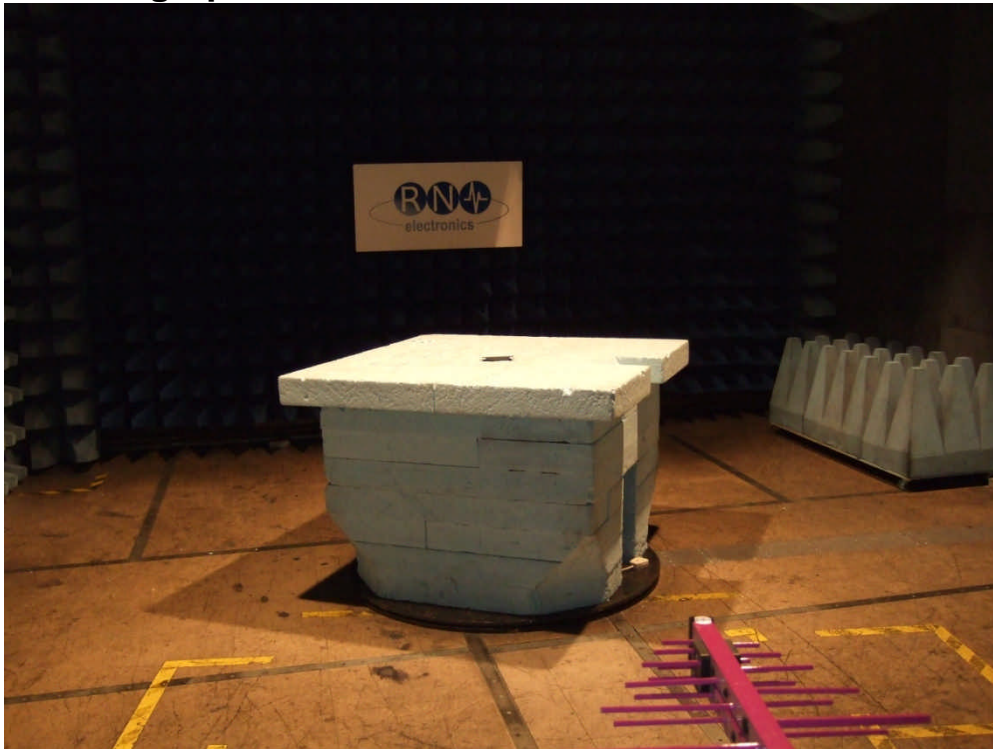
File name QMF21-J ISSUE 3, FCCPART15.249, RNE ISSUE 01

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**QMF21J – 3; 47CFR15C, RNE ISSUE 02 JAN 2012**

PAGE 28 OF 40

## 8. Photographs



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

File name QMF21-J ISSUE 3, FCCPART15.249, RNE ISSUE 01

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

**QMF21J – 3; 47CFR15C, RNE ISSUE 02 JAN 2012**

PAGE 29 OF 40

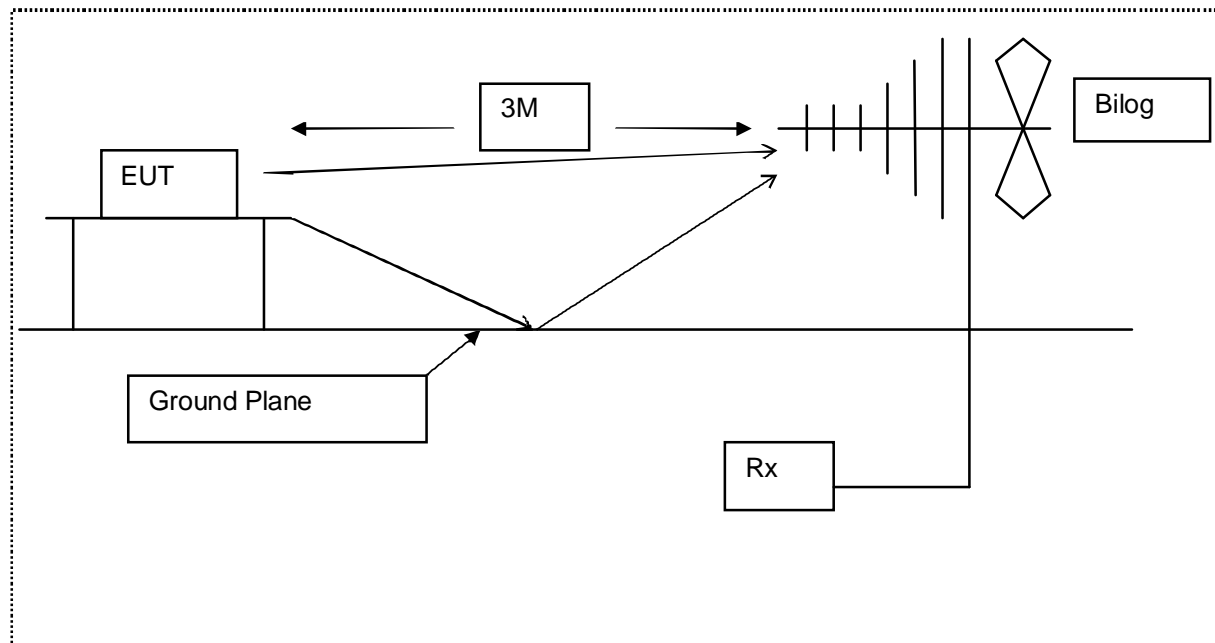
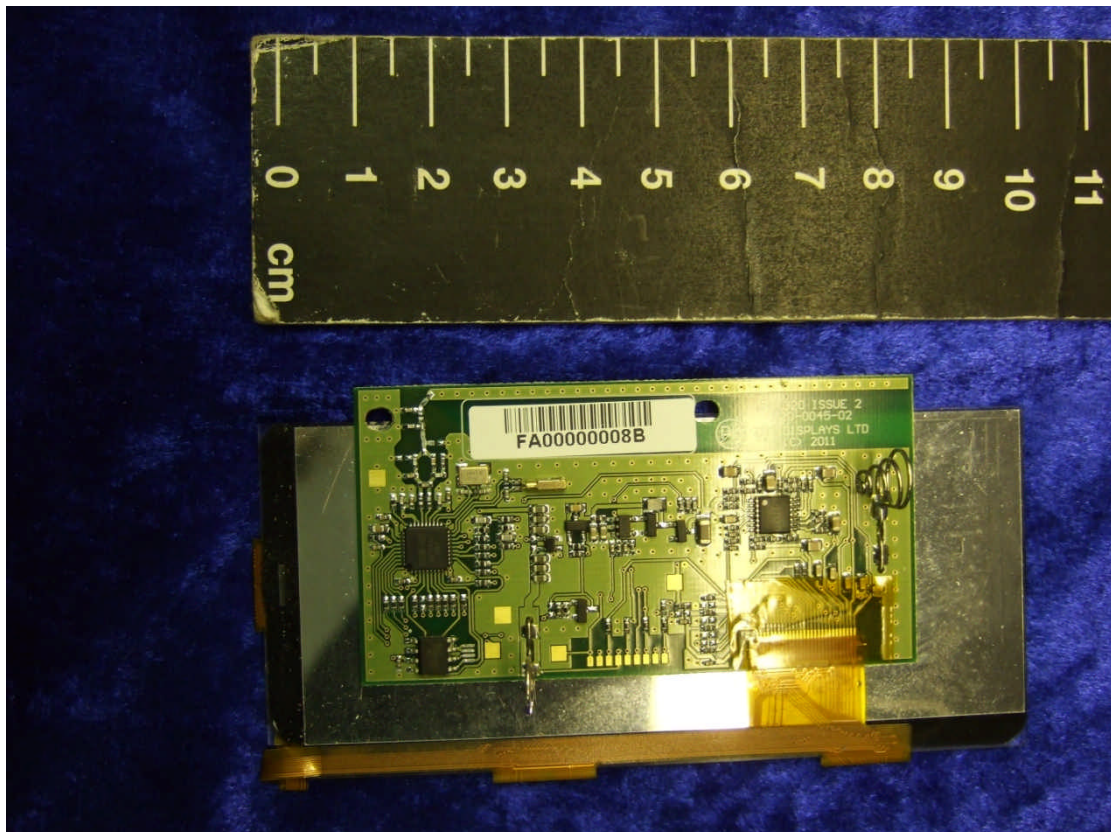


Diagram of the radiated emissions test setup.



**Identifying Photograph of the EUT**





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**QMF21J – 3; 47CFR15C, RNE ISSUE 02 JAN 2012**

PAGE 32 OF 40





## Internal Photographs of the EUT

File name QMF21-J ISSUE 3, FCCPART15.249, RNE ISSUE 01

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

**QMF21J – 3; 47CFR15C, RNE ISSUE 02 JAN 2012**

PAGE 33 OF 40

## **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.

RNNNo	Model	Description	Manufacturer	Date Calibrated	Period
E001	HP8542E	EMI Receiver & RF Filter	Hewlett Packard	09-Nov-11	12
E268	BHA 9118	1-18 GHz Horn Antenna	Schaffner	02-Mar-09	60
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
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
Toshiba	Laptop PC & power supply	Satellite Pro	-
ZBD Displays Ltd	Bounce Communicator	2	ZR000624

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