



TEST REPORT

Test Report No. : UL-RPT-RP10684163JD01A V2.0

Manufacturer : Datalogic ADC S.r.l
Model No. : MIZAR RADIO MODULE 915MHZ
FCC ID : U4F0022
Technology : DSS, DTS and DXX
Test Standard(s) : FCC Parts 15.109, 15.209(a), 15.247(d) and 15.249(a),(d)&(e)

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2. The results in this report apply only to the sample(s) tested.
3. The sample tested is in compliance with the above standard(s).
4. The test results in this report are traceable to the national or international standards.
5. Version 2.0 supersedes all previous versions.

Date of Issue: 11 March 2015

Checked by:

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Issued by :

pp

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This laboratory is accredited by UKAS.
The tests reported herein have been
performed in accordance with its' terms
of accreditation.

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1. Customer Information

Company Name:	Datalogic ADC S.r.l.
Address:	Via San Vitalino 13, Lippo di Calderara di Reno (BO), 40012, Italy

2. Summary of Testing

2.1. General Information

Specification Reference:	47CFR15.247
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart C (Intentional Radiators) - Section 15.247
Specification Reference:	47CFR15.249
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart C (Intentional Radiators) - Section 15.249
Specification Reference:	47CFR15.109
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart B (Unintentional Radiators) - Section 15.109
Specification Reference:	47CFR15.209
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart C (Intentional Radiators) - Section 15.209
Site Registration:	209735
Location of Testing:	UL VS LTD, Unit 3 Horizon, Wade Road, Kingsland Business Park, Basingstoke, Hampshire, RG24 8AH, United Kingdom
Test Dates:	21 February 2015 to 25 February 2015

2.2. Summary of Test Results

FCC Reference (47CFR)	Technology	Measurement	Result
Part 15.109	DSS	Receiver/Idle Mode Radiated Spurious Emissions	✓
Part 15.247(d)/15.209(a)	DSS	Transmitter Radiated Emissions	✓
Part 15.247(d)/15.209(a)	DSS	Transmitter Band Edge Radiated Emissions	✓
Part 15.247(d)/15.209(a)	DTS	Transmitter Radiated Emissions	✓
Part 15.247(d)/15.209(a)	DTS	Transmitter Band Edge Radiated Emissions	✓
Part 15.249(a)(d)(e)/ 15.209(a)	DXX	Transmitter Radiated Emissions	✓
Part 15.249(d)/15.209(a)	DXX	Transmitter Band Edge Radiated Emissions	✓
Key to Results  = Complied  = Did not comply			

2.3. Methods and Procedures

Reference:	ANSI C63.4 (2009)
Title:	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
Reference:	ANSI C63.10 (2009)
Title:	American National Standard for Testing Unlicensed Wireless Devices
Reference:	KDB 558074 D01 v03r02 June 5, 2014
Title:	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247

2.4. Deviations from the Test Specification

For the measurements contained within this test report, there were no deviations from, additions to, or exclusions from the test specification identified above.

3. Equipment Under Test (EUT)

3.1. Identification of Equipment Under Test (EUT)

Brand Name:	Datalogic ADC
Model Name or Number:	MIZAR RADIO MODULE 915MHZ
Test Sample Serial Number:	G14BAFFTW0008DB03
Hardware Version Number:	662938021
Software Version Number:	2.04B
FCC ID:	U4F0022

3.2. Description of EUT

The equipment under test was a radio module operating in the frequency band 902 MHz – 928 MHz and supporting DSS, DTS and DXX technologies.

3.3. Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

3.4. Additional Information Related to Testing

Tested Technologies:	DXX, DSS and DTS		
Power Supply Requirement:	Nominal	3.3 VDC	
Type of Unit:	Transceiver		
Modulation:	Manchester RZ (for DXX and DSS) & NRZ (for DTS)		
Data Rate:	36.846 kbps (for DXX and DSS) & 500 kbps (for DTS)		
Transmit Frequency Range:	902 MHz to 928 MHz		
Transmit Channels Tested for DXX and DSS:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	1	903.6490
	Middle	7	916.3510
	Top	12	926.9360
Transmit Channels Tested for DTS:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	1	902.8005
	Middle	13	915.1425
	Top	25	927.4845
Receive Frequency Range:	902 MHz to 928 MHz		
Receive Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Middle	7	916.3510

3.5. Support Equipment

The following support equipment was used to exercise the EUT during testing:

Description:	Ethernet to Serial cable (2 metres)
Brand Name:	Not marked or stated
Model Name or Number:	Not marked or stated
Serial Number:	Not marked or stated

Description:	Serial to USB cable (2 metres)
Brand Name:	Not marked or stated
Model Name or Number:	Not marked or stated
Serial Number:	Not marked or stated

Description:	Power supply
Brand Name:	PHIHONG
Model Name or Number:	PSAA18U-120
Serial Number:	Not marked or stated

Description:	Laptop PC
Brand Name:	DELL
Model Name or Number:	Latitude E5410
Serial Number:	DQC78L1

Description:	PCB
Brand Name:	Not marked or stated
Model Name or Number:	8051 BASE VESP M-INT
Serial Number:	Not marked or stated

3.6. Antenna

The table below lists the antenna that the manufacturer intends to use with this product when operating in the 902 to 928 MHz band:

Type	Stated Gain (dBd)	Manufacturer	Antenna Name
Monopole	-4.5	Datalogic	Antenna Cable GM4100-910

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

The EUT was tested in the following operating mode(s):

- Constantly transmitting at maximum power in fixed frequencies.
- Constantly transmitting at maximum power in hopping mode.
- Receive mode.

4.2. Configuration and Peripherals

The EUT was tested in the following configuration(s):

- The cable antenna was connected to the module for all tests.
- The EUT was tested as a standalone module on a PCB (type 8051 BASE VESP M-INT).
- The PCB is powered from a power supply which was connected to a 120 VAC 60 Hz single phase supply.
- The PCB is connected to the Laptop PC via a USB serial and serial to Ethernet cable. The EUT was configured using the customer's test commands in a terminal emulator software (Tera Term), installed on the laptop PC. Test mode procedures shown in customer's document barcode FCC 20140124_1218 ver 2.pdf were followed. The commands were used to enable a suitable transmission / receive mode and to select the test channels and modulation schemes as required.

5. Measurements, Examinations and Derived Results

5.1. General Comments

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to *Section 6. Measurement Uncertainty* for details.

In accordance with UKAS requirements all the measurement equipment is on a calibration schedule. All equipment was within the calibration period on the date of testing.

5.2. Test Results

5.2.1. Receiver/Idle Mode Radiated Spurious Emissions

Test Summary:

Test Engineer:	David Doyle	Test Date:	24 February 2015
Test Sample Serial Number:	G14BAFFTW0008DB03		

FCC Reference:	Part 15.109
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.5 referencing ANSI C63.4
Frequency Range:	30 MHz to 1000 MHz

Environmental Conditions:

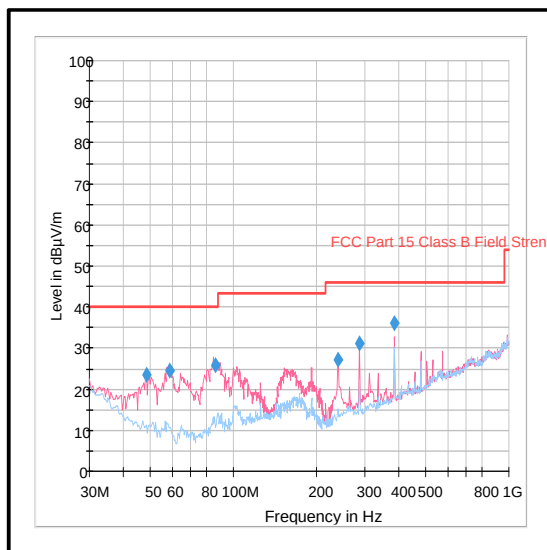
Temperature (°C):	24
Relative Humidity (%):	32

Note(s):

1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
2. All other emissions shown on the pre-scan plot were investigated and found to be ambient or >20 dB below the applicable limit or below the measurement system noise floor.
3. Measurements below 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

Results: Quasi Peak

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
48.581	Vertical	23.6	40.0	16.4	Complied
58.742	Vertical	24.6	40.0	15.4	Complied
85.782	Vertical	25.8	40.0	14.2	Complied
239.998	Vertical	27.1	46.0	18.9	Complied
287.971	Vertical	31.2	46.0	14.8	Complied
383.988	Vertical	36.0	46.0	10.0	Complied

Receiver/Idle Mode Radiated Spurious Emissions (continued)

Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying table.

Test Equipment Used:

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1657	Thermohygrometer	JM Handelspunkt	30.5015.13	Not stated	14 Mar 2015	12
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	26 Mar 2015	12
G0543	Amplifier	Sonoma	310N	230801	04 Mar 2015	3
A1834	Attenuator	Hewlett Packard	8491B	10444	Calibrated before use	-
M1124	Test Receiver	Rohde & Schwarz	ESIB 26	100046K	06 Oct 2015	12
A490	Antenna	Chase	CBL6111A	1590	29 Apr 2015	12

Receiver/Idle Mode Radiated Spurious Emissions (continued)**Test Summary:**

Test Engineer:	Georgios Vrezas	Test Dates:	21 February 2015 & 22 February 2015
Test Sample Serial Number:	G14BAFFTW0008DB03		

FCC Reference:	Part 15.109
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.6 referencing ANSI C63.4
Frequency Range:	1 GHz to 5 GHz

Environmental Conditions:

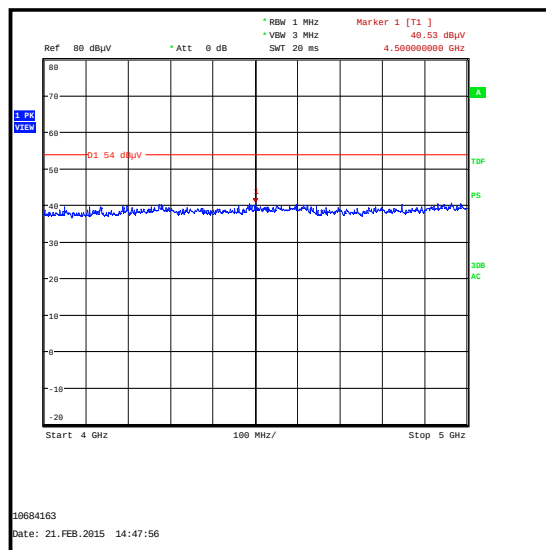
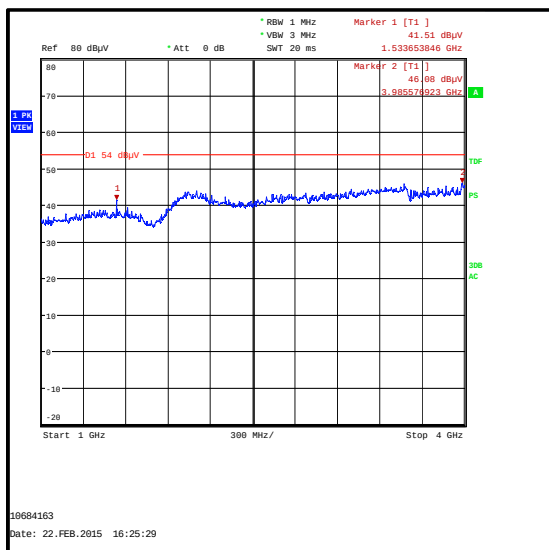
Temperature (°C):	20 to 21
Relative Humidity (%):	34

Note(s):

1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
2. The peak level was compared to the average limit as opposed to being compared to the peak limit because this is the more onerous limit.
3. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0002) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. Final measurements above 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

Results:

Frequency (MHz)	Antenna Polarity	Peak Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
1536.883	Horizontal	41.9	54.0	12.1	Complied

Receiver/Idle Mode Radiated Spurious Emissions (continued)

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Test Equipment Used:

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1656	Thermohygrometer	JM Handelspunkt	30.5015.13	None stated	14 Mar 2015	12
K0002	RSE Chamber	Rainford EMC	N/A	N/A	31 Mar 2015	12
M1874	Test Receiver	Rohde & Schwarz	ESU26	100553	13 May 2015	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	21 Dec 2015	12
A1818	Antenna	EMCO	3115	00075692	20 Dec 2015	12
A253	Antenna	Flann	12240-20	128	20 Dec 2015	12
M1657	Thermohygrometer	JM Handelspunkt	30.5015.13	Not stated	14 Mar 2015	12
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	26 Mar 2015	12
M1124	Test Receiver	Rohde & Schwarz	ESIB 26	100046K	06 Oct 2015	12

5.2.2. Transmitter Radiated Emissions < 1 GHz**Test Summary:**

Test Engineer:	David Doyle	Test Date:	25 February 2015
Test Sample Serial Number:	G14BAFFTW0008DB03		

FCC Reference:	Parts 15.247(d) & 15.209(a)
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.5 referencing ANSI C63.4
Frequency Range	30 MHz to 1000 MHz

Environmental Conditions:

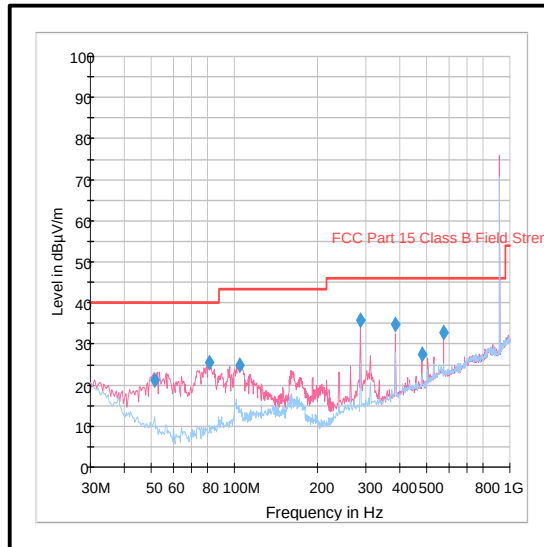
Temperature (°C):	24
Relative Humidity (%):	32

Note(s):

1. The emission at approximately 916 MHz shown on the 30 MHz to 1 GHz plot is the EUT fundamental.
2. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
3. All other emissions shown on the pre-scan plot were investigated and found to be ambient or >20 dB below the applicable limit or below the measurement system noise floor.
4. Measurements below 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
5. Pre-scans were performed and markers placed on the highest measured levels. The test receiver resolution bandwidth was set to 100 kHz and video bandwidth 300 kHz. The sweep time was set to auto. A peak detector was used, sweep time was set to auto and trace mode was Max Hold.
6. Final measurements were performed on the marker frequencies and the results entered into the table below. The test receiver resolution bandwidth was set to 120 kHz, using a CISPR quasi-peak detector and span big enough to see the whole emission.

Transmitter Radiated Emissions < 1 GHz (continued)**Results: DSS / Quasi-Peak**

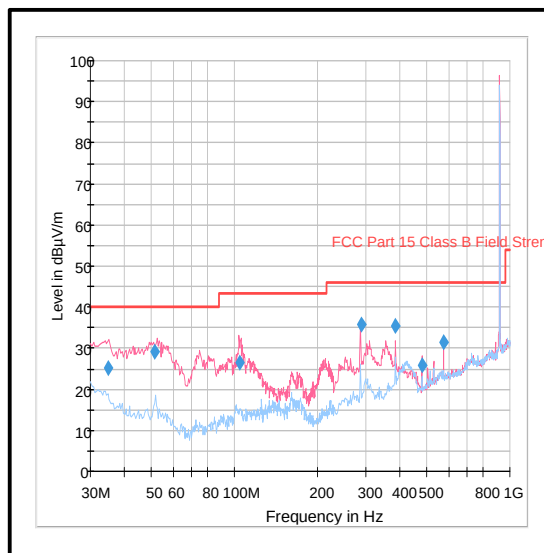
Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
51.410	Vertical	21.2	40.0	18.8	Complied
81.191	Vertical	25.5	40.0	14.5	Complied
104.654	Vertical	24.9	43.5	18.6	Complied
287.978	Vertical	35.8	46.0	10.2	Complied
383.980	Vertical	34.8	46.0	11.2	Complied
479.969	Vertical	27.4	46.0	18.6	Complied
575.987	Vertical	32.7	46.0	13.3	Complied



Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying table.

Transmitter Radiated Emissions < 1 GHz (continued)**Results: DTS / Quasi-Peak**

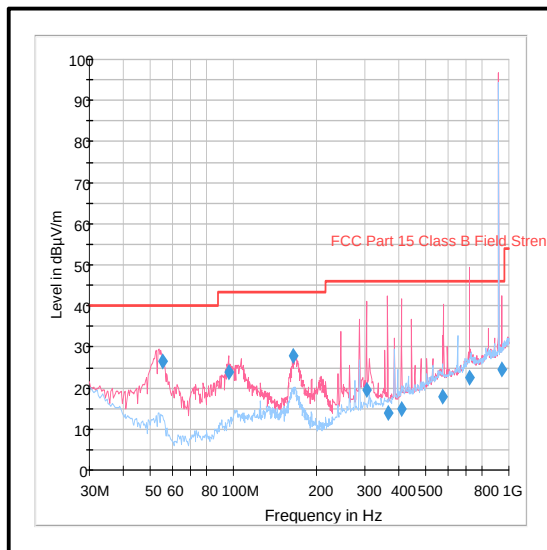
Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
34.897	Vertical	25.1	40.0	14.9	Complied
51.511	Vertical	29.0	40.0	11.0	Complied
104.736	Vertical	26.6	43.5	16.9	Complied
287.992	Vertical	35.8	46.0	10.2	Complied
383.988	Vertical	35.5	46.0	10.5	Complied
575.951	Vertical	31.5	46.0	14.5	Complied



Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying table.

Transmitter Radiated Emissions < 1 GHz (continued)**Results: DXX / Quasi-Peak**

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
55.447	Vertical	26.4	40.0	13.6	Complied
96.049	Vertical	23.9	43.5	19.6	Complied
165.292	Vertical	27.9	43.5	15.6	Complied



Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying table.

Test Equipment Used:

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1657	Thermohygrometer	JM Handelspunkt	30.5015.13	Not stated	14 Mar 2015	12
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	26 Mar 2015	12
G0543	Amplifier	Sonoma	310N	230801	04 Mar 2015	3
A1834	Attenuator	Hewlett Packard	8491B	10444	Calibrated before use	-
M1124	Test Receiver	Rohde & Schwarz	ESIB 26	100046K	06 Oct 2015	12
A490	Antenna	Chase	CBL6111A	1590	29 Apr 2015	12

5.2.3. Transmitter Radiated Emissions > 1 GHz**Test Summary:**

Test Engineer:	Georgios Vrezas	Test Dates:	21 February 2015, 22 February 2015 & 25 February 2015
Test Sample Serial Number:	G14BAFFTW0008DB03		

FCC Reference:	For DSS: Parts 15.247(d) & 15.209(a) For DTS: Parts 15.247(d) & 15.209(a) For DXX: Parts 15.249(d)(e) & 15.209(a)
Test Method Used:	For DSS: As detailed in ANSI C63.10 Sections 6.3 and 6.6 referencing ANSI C63.4 For DTS: As detailed in ANSI C63.10 Sections 6.3 and 6.6 referencing ANSI C63.4. FCC KDB 558074 Sections 11 & 12 For DXX: As detailed in ANSI C63.10 Sections 6.3 and 6.6 referencing ANSI C63.4
Frequency Range	1 GHz to 9.3 GHz

Environmental Conditions:

Temperature (°C):	20 to 22
Relative Humidity (%):	34

Note(s):

1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
2. In accordance with ANSI C63.10 section 6.6.4.2, Note 1, the peak level complied with the average limit; therefore average results were not required.
3. All other emissions shown on the pre-scan plot were investigated and found to be ambient or >20 dB below the applicable limit or below the measurement system noise floor.
4. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0002) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. Final measurements above 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
5. As the EUT operates below 10 GHz Transmitter Radiated Spurious Emissions pre-scans were performed up to the 10th harmonic frequency (9.3 GHz).
6. Pre-scans were performed and a marker placed on the highest measured level of the appropriate plot. The test receiver resolution bandwidth was set to 1 MHz and video bandwidth 3 MHz. The sweep time was set to auto. Peak and average measurements were performed with their own appropriate detectors during the pre-scan measurements.

Transmitter Radiated Emissions > 1 GHz (continued)**Results: DSS / Bottom Channel**

Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
1536.741	Horizontal	41.4	54.0	12.6	Complied

Results: DSS / Middle Channel

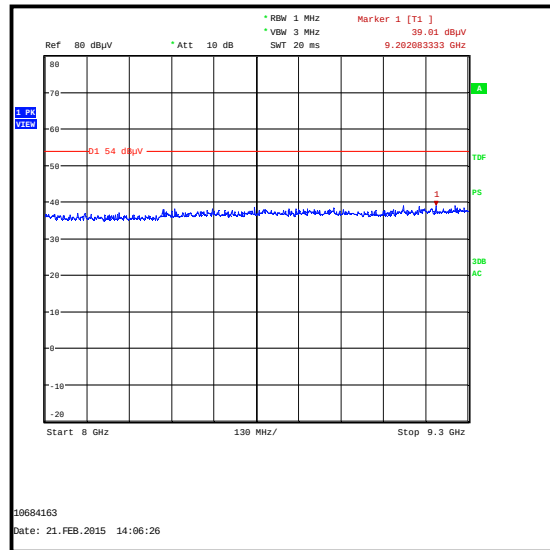
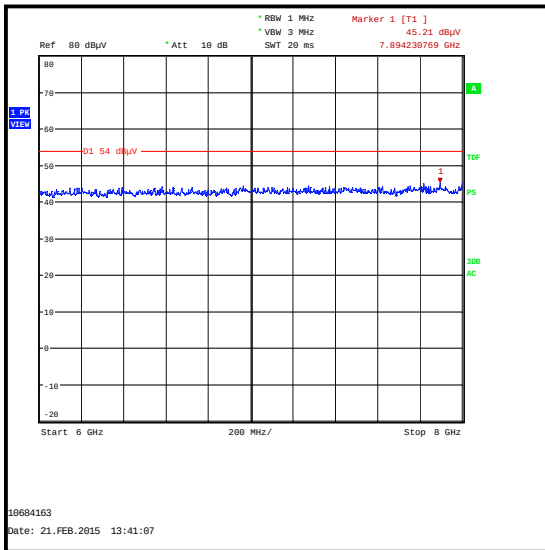
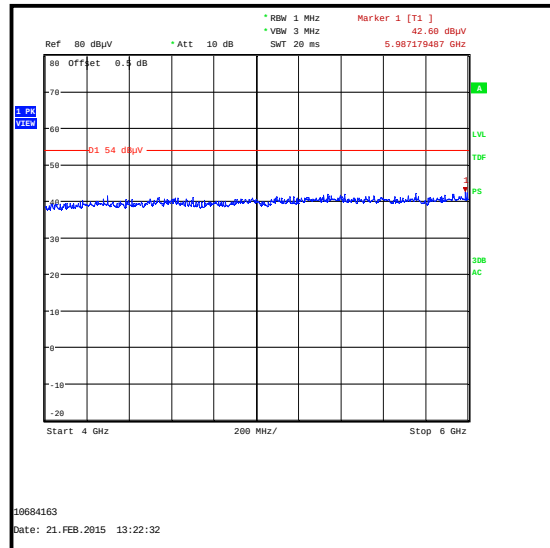
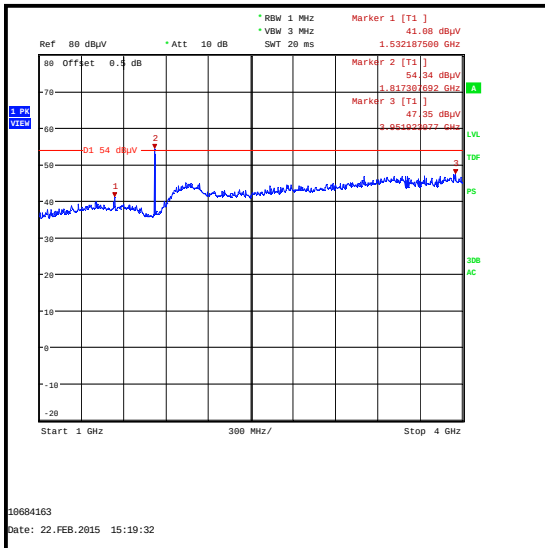
Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
1536.771	Horizontal	41.6	54.0	12.4	Complied

Results: DSS / Top Channel

Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
1537.078	Horizontal	41.8	54.0	12.2	Complied

Results: DSS / Hopping mode

Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
1536.631	Horizontal	43.5	54.0	10.5	Complied

Transmitter Radiated Emissions > 1 GHz (continued)**Results: DSS**

Transmitter Radiated Emissions > 1 GHz (continued)**Results: DTS / Bottom Channel**

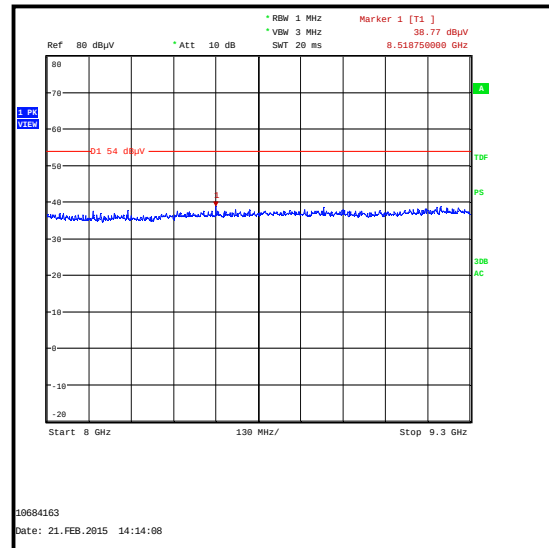
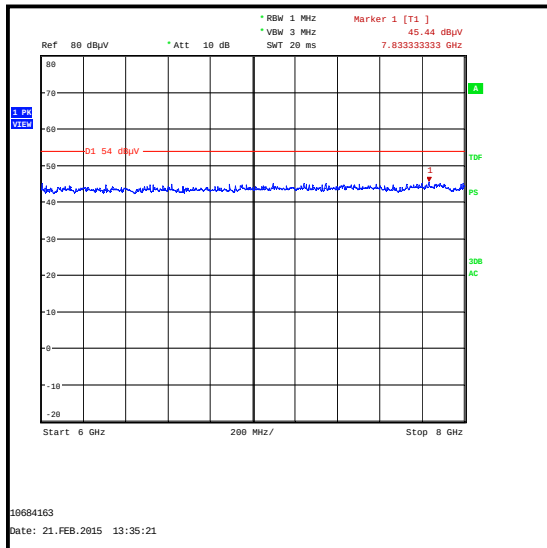
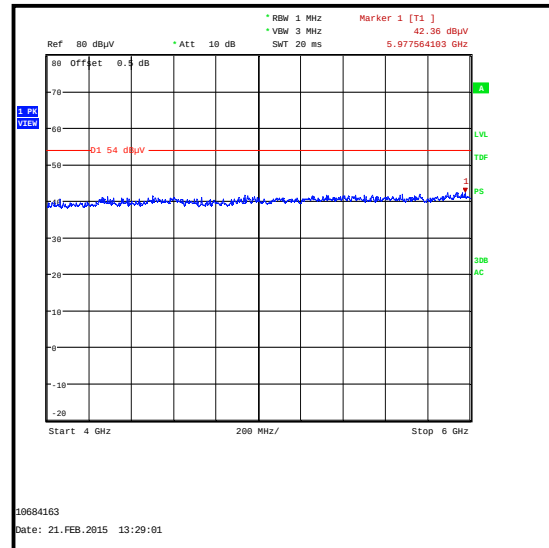
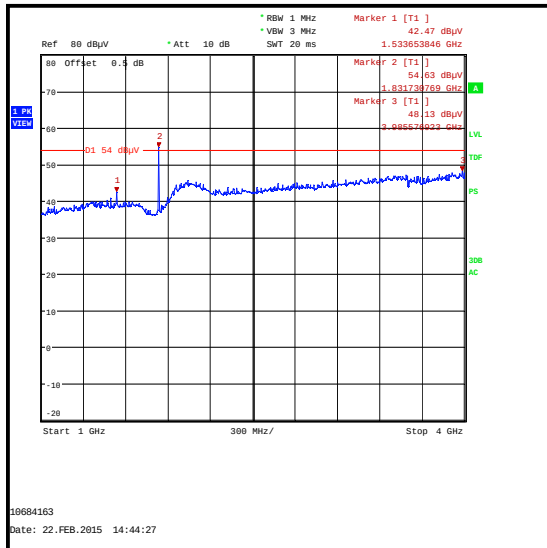
Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
1537.091	Horizontal	42.1	54.0	11.9	Complied

Results: DTS / Middle Channel

Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
1536.931	Horizontal	42.7	54.0	11.3	Complied

Results: DTS / Top Channel

Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
1536.747	Horizontal	42.1	54.0	11.9	Complied

Transmitter Radiated Emissions > 1 GHz (continued)**Results: DTS**

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Transmitter Radiated Emissions > 1 GHz (continued)**Results: DXX / Bottom Channel**

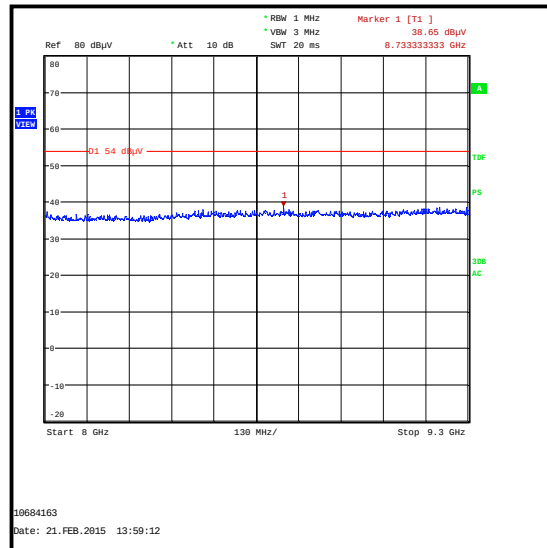
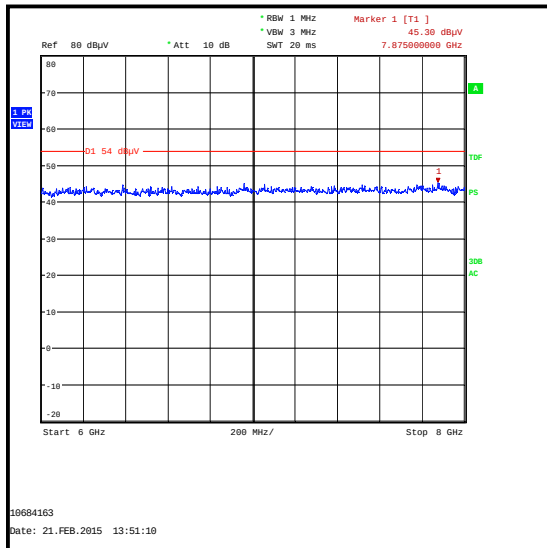
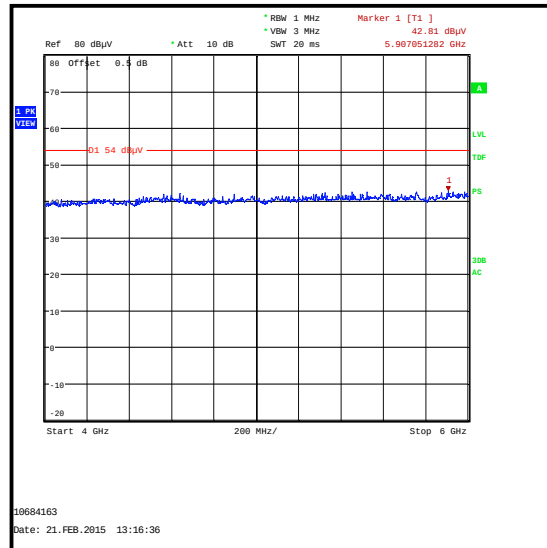
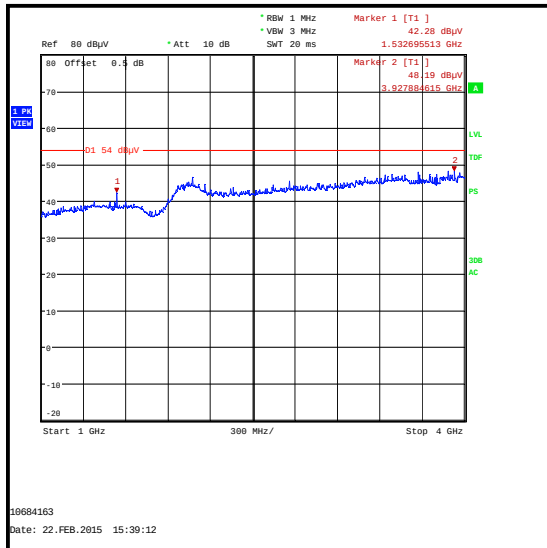
Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
1536.862	Horizontal	42.5	54.0	11.5	Complied

Results: DXX / Middle Channel

Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
1537.087	Horizontal	42.2	54.0	11.8	Complied

Results: DXX / Top Channel

Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
1537.079	Horizontal	42.7	54.0	11.3	Complied

Transmitter Radiated Emissions > 1 GHz (continued)**Results: DXX**

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Transmitter Radiated Emissions > 1 GHz (continued)**Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1656	Thermohygrometer	JM Handelspunkt	30.5015.13	Not stated	14 Mar 2015	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	31 Mar 2015	12
M1874	Test Receiver	Rohde & Schwarz	ESU26	100553	13 May 2015	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	21 Dec 2015	12
A2467	High Pass Filter	Wainwright Instruments GmbH	WHJE5-920-1000-4000-60EE	2	13 Feb 2016	12
A1975	High Pass Filter	AtlanTechRF	AFH-03000	090424010	12 Apr 2015	12
A1818	Antenna	EMCO	3115	00075692	20 Dec 2015	12
A253	Antenna	Flann	12240-20	128	20 Dec 2015	12
A254	Antenna	Flann	14240-20	139	20 Dec 2015	12
A255	Antenna	Flann	16240-20	519	20 Dec 2015	12

5.2.4. Transmitter Band Edge Radiated Emissions**Test Summary:**

Test Engineer:	Georgios Vrezas	Test Dates:	21 February 2015 & 25 February 2015
Test Sample Serial Number:	G14BAFFTW0008DB03		

FCC Reference:	For DSS: Parts 15.247(d) & 15.209(a) For DTS: Parts 15.247(d) & 15.209(a) For DXX: Parts 15.249(d) & 15.209
Test Method Used:	As detailed in ANSI C63.10 Section 6.9.2

Environmental Conditions:

Temperature (°C):	21 to 22
Relative Humidity (%):	34

Note(s):

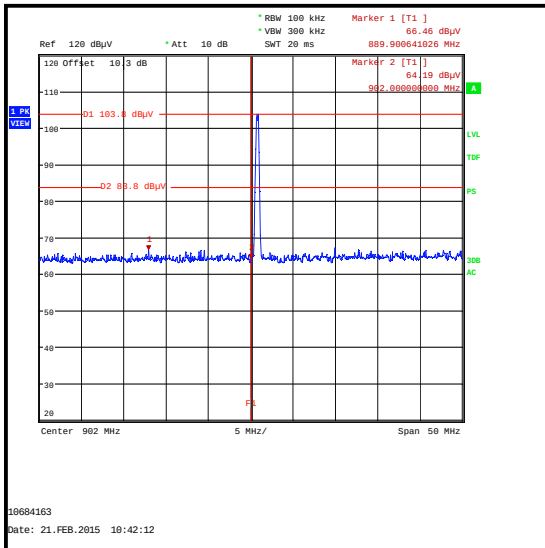
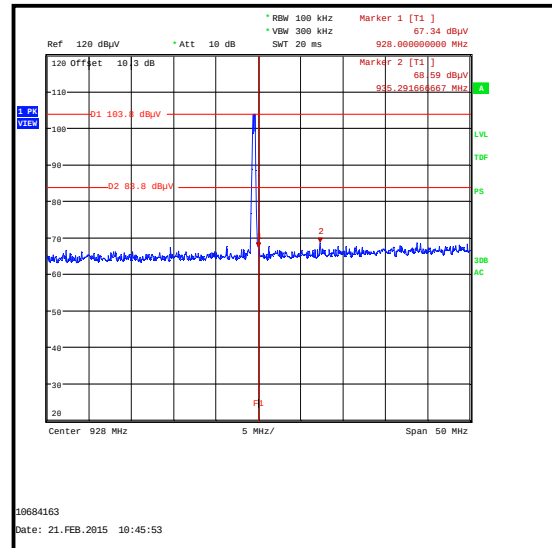
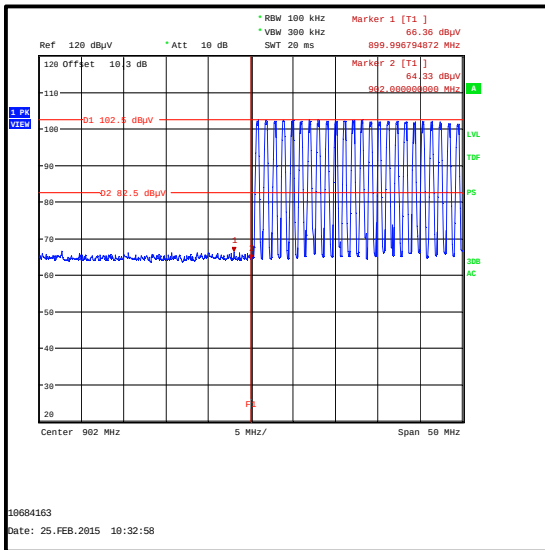
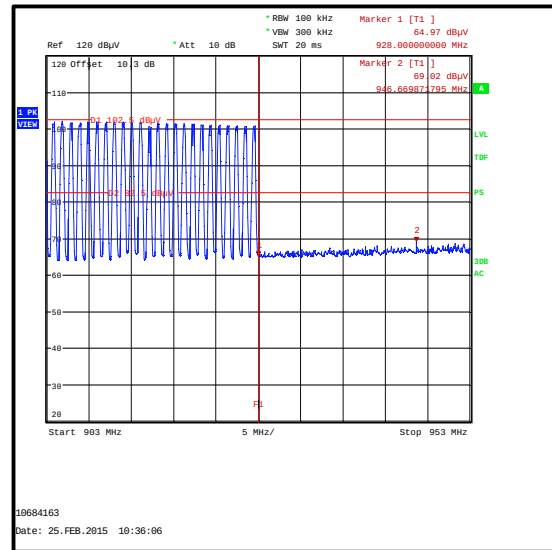
1. The final measured value, for the given emission, in the tables below incorporates the calibrated antenna factor and cable loss.
2. As both band edges fall within the non-restricted band, only peak measurements are required. The test receiver resolution bandwidth was set to 100 kHz and video bandwidth to 300 kHz. A peak detector was used, the sweep time was set to auto and trace mode was Max Hold. The test receiver was left to sweep for a sufficient length of time in order to maximise the carrier level and out-of-band emissions. A marker and corresponding reference level line were placed on the peak of the carrier. A marker was placed on the band edge spot frequencies and the respective levels were recorded.
3. For DSS and DTS, the spectrum analyser's reference level was set to 120 dB μ V/m in order to obtain sufficient headroom on the result plots.
4. For DXX, the spectrum analyser's reference level was set to 100 dB μ V/m in order to obtain sufficient noise floor clearance on the result plots.

Transmitter Band Edge Radiated Emissions (continued)**Results: DSS / Static Mode**

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	-20 dBc Limit (dB μ V/m)	Margin (dB)	Result
889.901	Vertical	66.5	83.8	17.3	Complied
902	Vertical	64.2	83.8	19.6	Complied
928	Vertical	67.3	83.8	16.5	Complied
935.292	Vertical	68.6	83.8	15.2	Complied

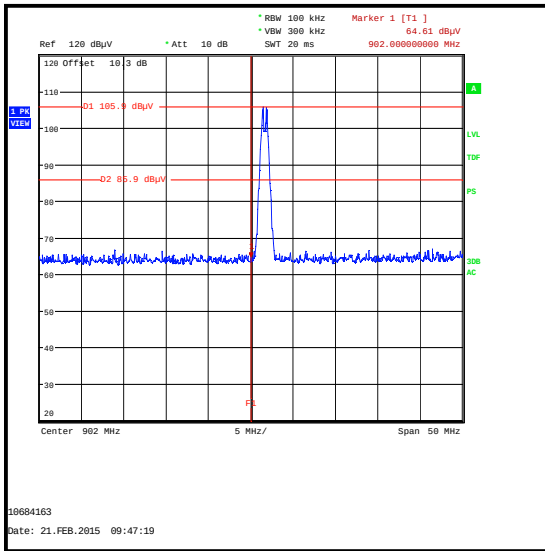
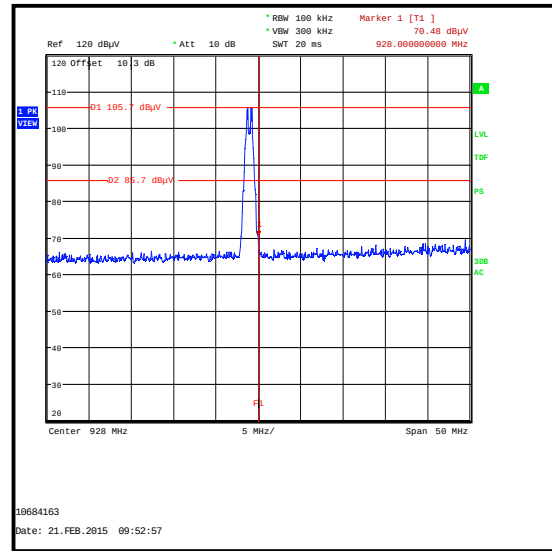
Results: DSS / Hopping Mode

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	-20 dBc Limit (dB μ V/m)	Margin (dB)	Result
899.997	Vertical	66.4	82.5	16.1	Complied
902	Vertical	64.3	82.5	18.2	Complied
928	Vertical	65.0	82.5	17.5	Complied
946.670	Vertical	69.0	82.5	13.5	Complied

Transmitter Band Edge Radiated Emissions (continued)**Results: DSS****Lower Band Edge / Static Mode****Upper Band Edge / Static Mode****Lower Band Edge / Hopping Mode****Upper Band Edge / Hopping Mode**

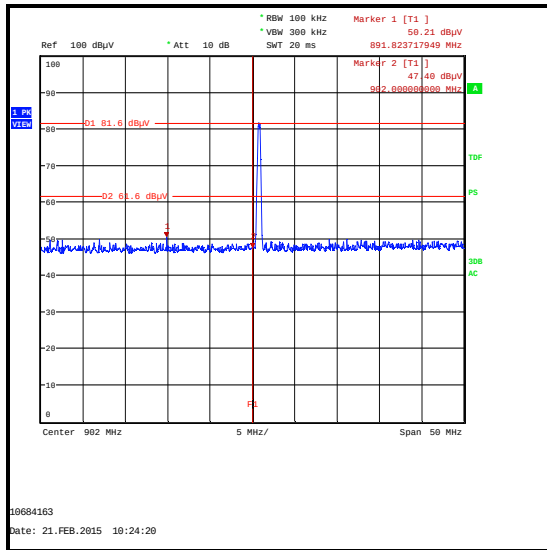
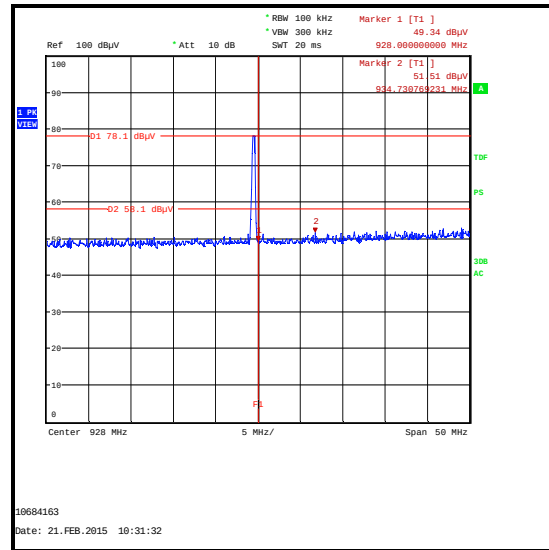
Transmitter Band Edge Radiated Emissions (continued)**Results: DTS**

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	-20 dBc Limit (dB μ V/m)	Margin (dB)	Result
902	Vertical	64.6	85.9	21.3	Complied
928	Vertical	70.5	85.7	15.2	Complied

**Lower Band Edge / Bottom Channel****Upper Band Edge / Top Channel**

Transmitter Band Edge Radiated Emissions (continued)**Results: DXX**

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	-20 dBc Limit (dB μ V/m)	Margin (dB)	Result
891.824	Vertical	50.2	61.6	11.4	Complied
902	Vertical	47.4	61.6	14.2	Complied
928	Vertical	49.3	58.1	8.8	Complied
934.731	Vertical	51.5	58.1	6.6	Complied

**Lower Band Edge / Bottom Channel****Upper Band Edge / Top Channel****Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1656	Thermohygrometer	JM Handelspunkt	30.5015.13	Not stated	14 Mar 2015	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	31 Mar 2015	12
M1874	Test Receiver	Rohde & Schwarz	ESU26	100553	13 May 2015	12
A1396	Attenuator	Huber & Suhner	6810.17.B	757987	02 May 2015	12
A288	Antenna	Chase	CBL6111A	1589	21 Aug 2015	12

6. Measurement Uncertainty

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor such that a confidence level of approximately 95% is maintained. For the purposes of this document "approximately" is interpreted as meaning "effectively" or "for most practical purposes".

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
Radiated Spurious Emissions	30 MHz to 1 GHz	95%	±5.65 dB
Radiated Spurious Emissions	1 GHz to 9.3 GHz	95%	±2.94 dB

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty the published guidance of the appropriate accreditation body is followed.

7. Report Revision History

Version Number	Revision Details		
	Page No(s)	Clause	Details
1.0	-	-	Initial Version
2.0	-	-	Section 3.6 added Updates to sections 3.5 & 4.2

---END OF REPORT---