TEST REPORT

Test Report No. : UL-RPT-RP10596563JD06A

Manufacturer	:	Assa Abloy Hospitality AS
Model No.	:	681402004
FCC ID	:	Y7V-681402004
Technology	:	*Bluetooth* – Low Energy
Test Standard(s)	:	FCC Parts 15.109, 15.207 & 15.247

1. This test report shall not be reproduced in full or partial, without the written approval of UL VS LTD.
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 1.0.

Date of Issue: 23 January 2015

Checked by:

Ian Watch
Senior Engineer, Radio Laboratory

Issued by :

pp

John Newell
Quality Manager,
UL VS LTD

0644

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

UL VS LTD

Pavilion A, Ashwood Park, Ashwood Way, Basingstoke, Hampshire, RG23 8BG, UK
Telephone: +44 (0)1256 312000
Facsimile: +44 (0)1256 312001

This page has been left intentionally blank.

Table of Contents

1. Customer Information

Company Name:	Assa Abloy Hospitality AS
Address:	Anolitveien 1-3 1400 Ski Norway

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:	47CFR15.109 and 47CFR15.209
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart C (Intentional Radiators) - Sections 15.109 and 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:	11 December 2014 to 16 January 2015

2.2. Summary of Test Results

FCC Reference (47CFR)	Measurement	Result
Part 15.109	Receiver/Idle Mode Radiated Spurious Emissions	✓
Part 15.247(a)(2)	Transmitter Minimum 6 dB Bandwidth	✓
Part 15.247(e)	Transmitter Power Spectral Density	Note 1
Part 15.247(b)(3)	Transmitter Maximum Peak Output Power	✓
Part 15.247(d)/15.209(a)	Transmitter Radiated Emissions	✓
Part 15.247(d)/15.209(a)	Transmitter Band Edge Radiated Emissions	✓

Key to Results

✓ = Complied ✗ = Did not comply

Note(s):

1. In accordance with FCC KDB 558074 Section 10.1, PSD is not required if the maximum conducted output power is less than the PSD limit of 8 dBm / 3 kHz. The PSD level is therefore deemed to be equal to the measured total output power.

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:	Assa Abloy Hospitality AS
Model Name or Number:	681402004
Test Sample Serial Number:	Not marked or stated *(Conducted sample)*
Hardware Version:	rev. C
Software Version:	3.11
FCC ID:	Y7V-681402004

Brand Name:	Assa Abloy Hospitality AS
Model Name or Number:	681402004
Test Sample Serial Number:	Not marked or stated *(Radiated sample)*
Hardware Version:	rev. C
Software Version:	3.11
FCC ID:	Y7V-681402004

3.2. Description of EUT

The Equipment Under Test was a Bluetooth LE Module.

3.3. Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

3.4. Additional Information Related to Testing

Technology Tested:	*Bluetooth* Low Energy (Digital Transmission System)		
Type of Unit:	Transceiver		
Channel Spacing:	2 MHz		
Modulation:	GFSK		
Data Rate:	1 Mbit/s		
Power Supply Requirement(s):	Nominal	4.5 VDC	
Maximum Conducted Output Power:	3.7 dBm		
Antenna Gain:	3.5 dBi		
Transmit /Receive Frequency Range:	2402 MHz to 2480 MHz		
Transmit /Receive Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	0	2402
	Middle	19	2440
	Top	39	2480

3.5. Support Equipment

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

Description:	Laptop
Brand Name:	Lenovo
Model Name or Number:	L440
Serial Number:	R9-019EA1 14/04

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

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

- Continuously transmitting with a modulated carrier at maximum power on the bottom, middle and top channels as required. Data pattern was set to PRBS9.
- Continuous receive mode, listening for packets.

4.2. Configuration and Peripherals

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

- The radiated sample consisted of a small module fitted to a PCB. An integral antenna was built into the PCB. A 6-way PCB connector was fitted to provide DC power and USB serial control.
- The conducted sample consisted of a small module fitted to a PCB. A short length of miniature semi rigid cable entered a hole in the module to provide access to an RF connection inside, with an SMA connection provided on the other end of cable for testing purposes. A 6-way PCB connector was fitted to provide DC power and USB serial control.
- The EUT PCB is fitted with a permanent 6-way male connector (USB interface). A short test cable, approximately 100 mm in length, was inserted into the connector. The test cable has a DC breakout and this was connected to a battery holder containing three AA batteries in series. The opposite end of the 100 mm cable was connected, via a 6-way in-line connector, to a USB cable of approximately 1.5 metres in length. This USB cable connected to a laptop PC running the test application.
- For all tests, the battery voltage was monitored throughout testing.
- The EUT was controlled using *Python v2.7* programming language through a DOS Command prompt on a test laptop PC. The commands allowed changing of transmit / receive modes, operating frequency, operating time period and data payload pattern as required.
- For continuous transmit tests, the *runTransmitTestNoUSB.py* command was run to setup the EUT for each required channel. The laptop connection was removed from the EUT after each setup
- For continuous receive tests, the *runReceiveTestNoUSB.py* command was run to setup the EUT. The laptop connection was removed from the EUT after setup.

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:	Keith Tucker	**Test Date:**	15 December 2014
Test Sample Serial Number:	Radiated sample		

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):	22
Relative Humidity (%):	39

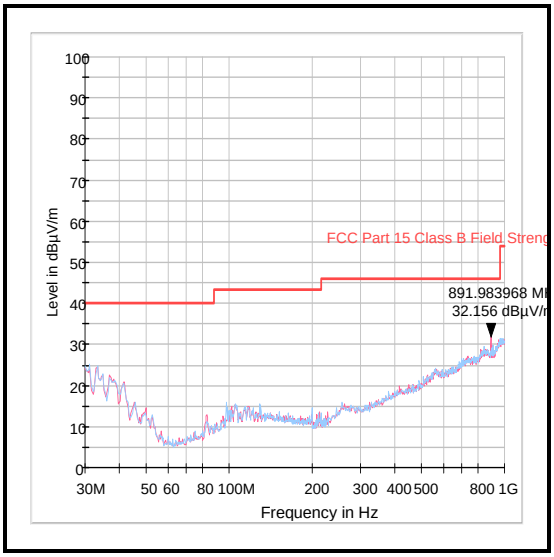
Note(s):

1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
2. No spurious emissions were detected above the noise floor of the measuring receiver therefore the highest peak noise floor reading of the measuring receiver was recorded as shown in the table below
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
891.983	Vertical	32.2	46.0	13.8	Complied

Receiver/Idle Mode Radiated Spurious Emissions (continued)



Test Equipment Used:

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1622	Thermohygrometer	JM Handelspunkt	30.5015.13	None stated	31 Dec 2014	12
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	26 Dec 2014	12
G0543	Amplifier	Sonoma	310N	230801	04 Mar 2015	12
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	15 Feb 2015	12
A490	Antenna	Chase	CBL6111A	1590	29 Apr 2015	12
A1834	Attenuator	Hewlett Packard	8491B	10444	Calibrated before use	12

Receiver/Idle Mode Radiated Spurious Emissions (continued)

Test Summary:

Test Engineer:	Keith Tucker	**Test Date:**	17 December 2014
Test Sample Serial Number:	Radiated Sample		

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 12.5 GHz

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	38

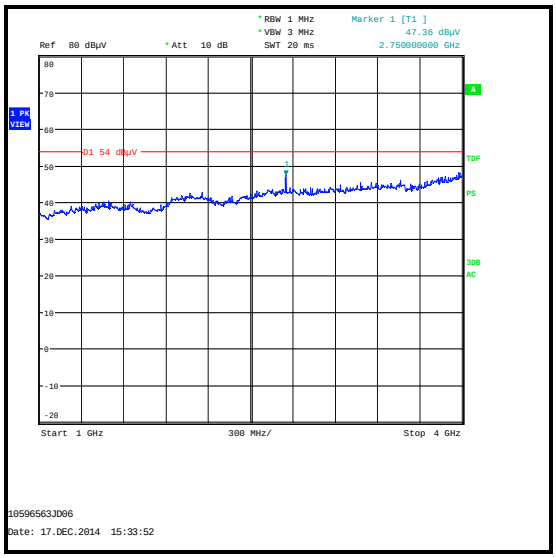
Note(s):

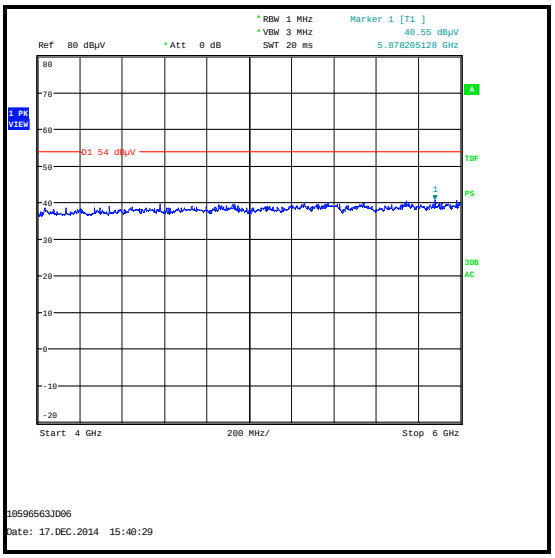
1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
2. The peak level was compared to the average limit as opposed to being compared to the peak limit because this is the more onerous limit.
3. All other emissions shown on the pre-scan plots 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.

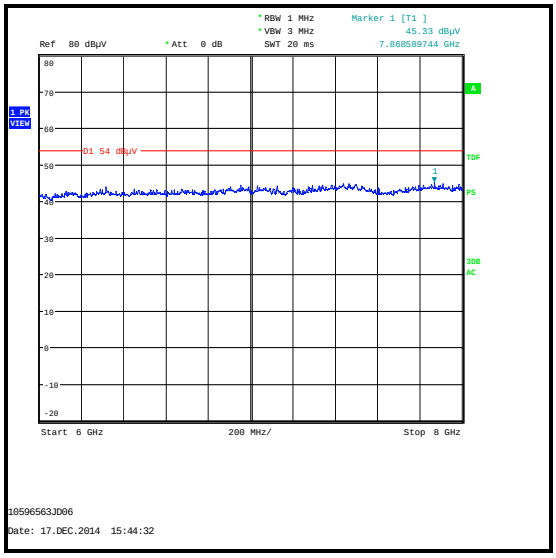
Results:

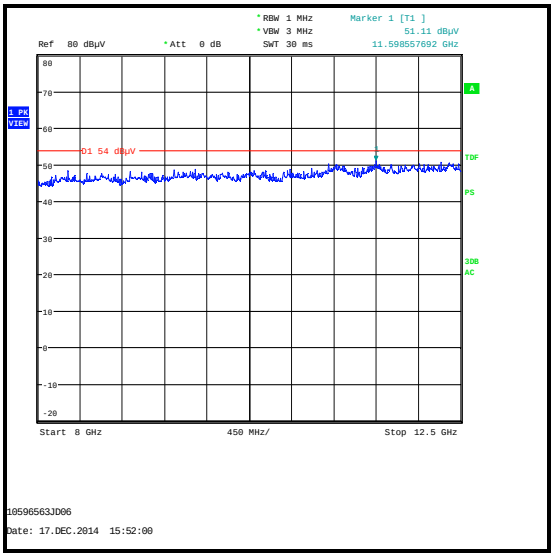
Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
2750.000	Vertical	47.4	54.0	6.6	Complied

Receiver/Idle Mode Radiated Spurious Emissions (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	19 Dec 2014	12
A1818	Antenna	EMCO	3115	00075692	19 Dec 2014	12
A253	Antenna	Flann Microwave	12240-20	128	19 Dec 2014	12
A254	Antenna	Flann Microwave	14240-20	139	19 Dec 2014	12
A255	Antenna	Flann Microwave	16240-20	519	19 Dec 2014	12
M1874	Test Receiver	Rohde & Schwarz	ESU26	100553	13 May 2015	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	18 May 2015	12

5.2.2. Transmitter Minimum 6 dB Bandwidth

Test Summary:

Test Engineer:	Keith Tucker	**Test Date:**	16 January 2015
Test Sample Serial Number:	Conducted Sample		

FCC Reference:	Part 15.247(a)(2)
Test Method Used:	As detailed in FCC KDB 558074 Section 8.1 Option 1

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	36

Note(s):

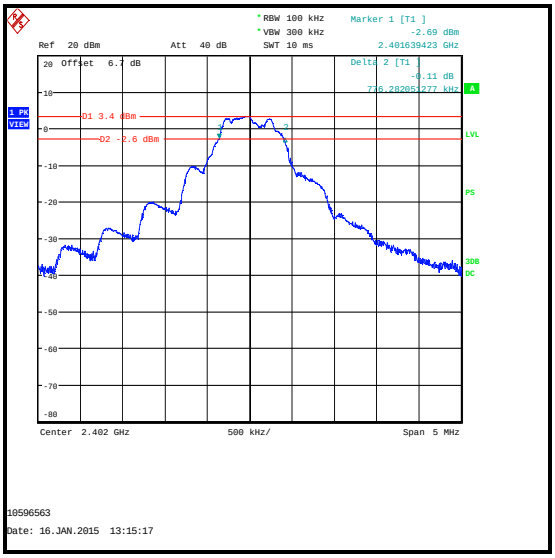
1. 6 dB DTS bandwidth tests were performed using a spectrum analyser in accordance with FCC KDB 558074 Section 8.1 Option 1 measurement procedure.
2. The spectrum analyser was connected to the RF port on the EUT using suitable attenuation and RF cable.

Results:

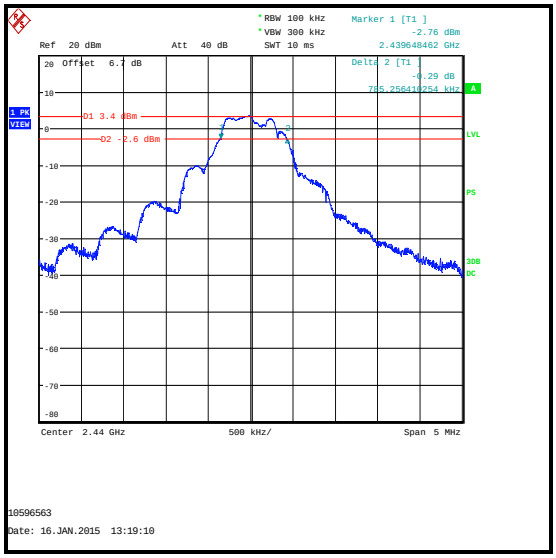
Channel	6 dB Bandwidth (kHz)	Limit (kHz)	Margin (kHz)	Result
Bottom	776.282	≥500	276.282	Complied
Middle	785.256	≥500	285.256	Complied
Top	665.064	≥500	165.064	Complied

Transmitter Minimum 6 dB Bandwidth (continued)

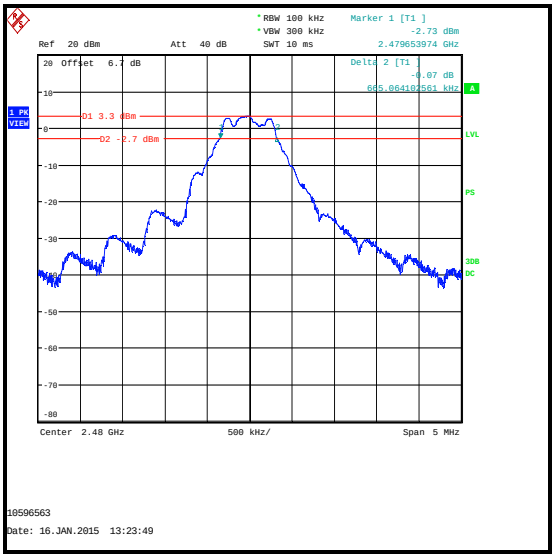
Results:



Bottom Channel



Middle Channel



Top Channel

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
M1886	Signal Analyser	Rohde & Schwarz	ESU 26	100554	09 May 2015	12
A239	Attenuator	Huber & Suhner	6806.17.B	Not stated	02 May 2015	12

5.2.3. Transmitter Maximum Peak Output Power

Test Summary:

Test Engineer:	Keith Tucker	**Test Date:**	16 January 2015
Test Sample Serial Number:	Conducted Sample		

FCC Reference:	Part 15.247(b)(3)
Test Method Used:	As detailed in FCC KDB 558074 Section 9.1.1 and Notes below

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	36

Note(s):

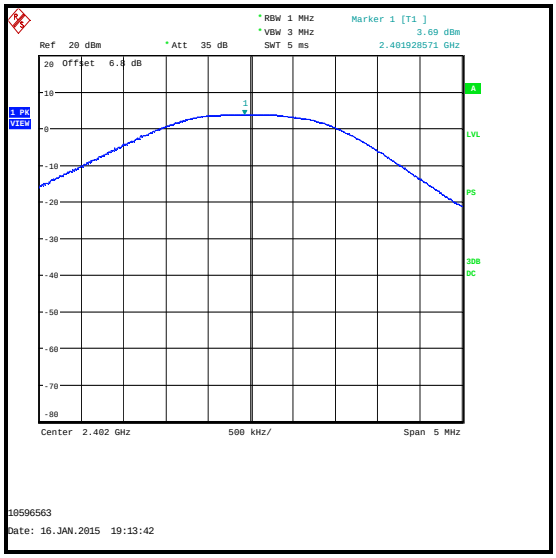
1. Conducted power tests were performed using a spectrum analyser in accordance with FCC KDB 558074 Section 9.1.1 with the RBW > DTS bandwidth. The resolution bandwidth was set to 1 MHz and video bandwidth 3 MHz. A peak detector was used, sweep time set to auto and trace mode was Max Hold. The span was set to 5 MHz.
2. The spectrum analyser was connected to the RF port on the EUT using a suitable RF attenuator. An RF level offset of 6.8 dB was entered on the spectrum analyser to compensate for both the loss of the attenuator and for the 0.3 dB loss in the cable from the EUT RF port to the module.
3. The conducted power was added to the declared antenna gain to obtain the EIRP.

Results:

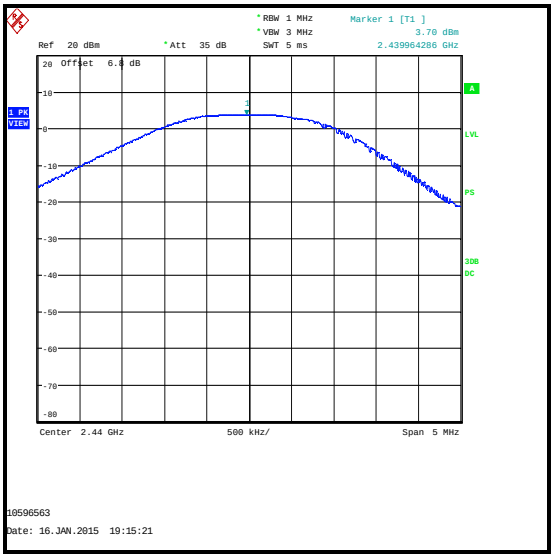
Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	3.7	30.0	26.3	Complied
Middle	3.7	30.0	26.3	Complied
Top	3.5	30.0	26.5	Complied

Channel	Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	3.7	3.5	7.2	36.0	28.8	Complied
Middle	3.7	3.5	7.2	36.0	28.8	Complied
Top	3.5	3.5	7.0	36.0	29.0	Complied

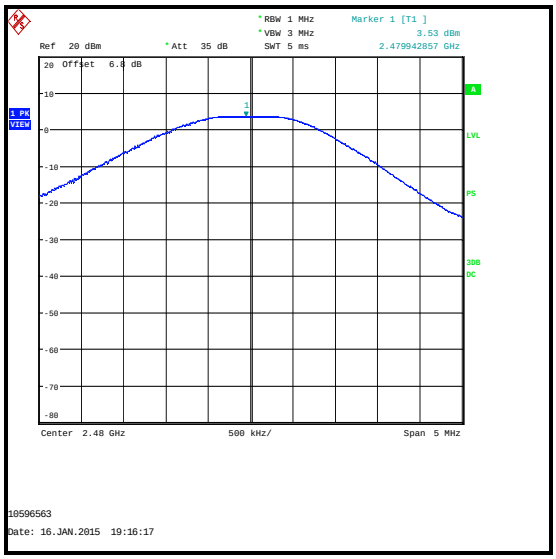
Transmitter Maximum Peak Output Power (continued)



Bottom Channel



Middle Channel



Top Channel

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
M1886	Signal Analyser	Rohde & Schwarz	ESU 26	100554	09 May 2015	12
A239	Attenuator	Huber & Suhner	6806.17.B	Not stated	02 May 2015	12

5.2.4. Transmitter Radiated Emissions

Test Summary:

Test Engineer:	Keith Tucker	**Test Date:**	15 December 2014
Test Sample Serial Number:	Radiated Sample		

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):	22
Relative Humidity (%):	39

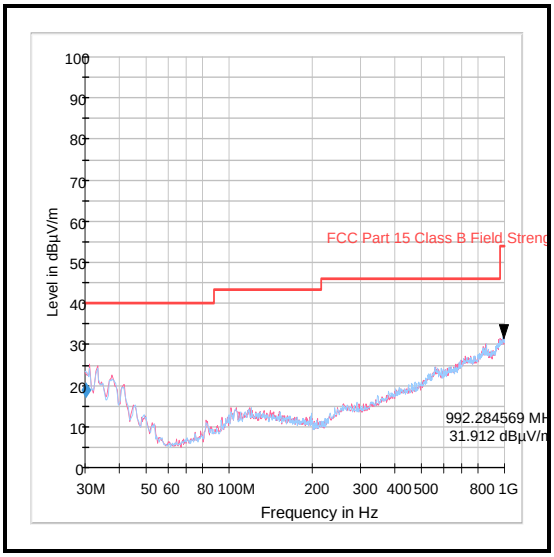
Note(s):

1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
2. The preliminary scans showed similar emission levels below 1 GHz, for each channel of operation. Therefore final radiated emissions measurements were performed with the EUT set to the middle channel only.
3. No spurious emissions were detected above the noise floor of the measuring receiver therefore the highest peak noise floor reading of the measuring receiver was recorded as shown in the table below.
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 a marker placed on the highest measured level. 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 frequency 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 wide enough to see the whole emission.

Results: Middle Channel

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
992.284	Vertical	31.9	54.0	22.1	Complied

Transmitter Radiated Emissions (continued)



Test Equipment Used:

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1622	Thermohygrometer	JM Handelspunkt	30.5015.13	None stated	31 Dec 2014	12
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	26 Dec 2014	12
G0543	Amplifier	Sonoma	310N	230801	04 Mar 2015	12
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	15 Feb 2015	12
A490	Antenna	Chase	CBL6111A	1590	29 Apr 2015	12
A1834	Attenuator	Hewlett Packard	8491B	10444	Calibrated before use	12

Transmitter Radiated Emissions (continued)

Test Summary:

Test Engineer:	Keith Tucker	**Test Dates:**	11 December 2014 & 12 December 2014
Test Sample Serial Number:	Radiated Sample		

FCC Reference:	Parts 15.247(d) & 15.209(a)
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.6 referencing ANSI C63.4
Frequency Range	1 GHz to 25 GHz

Environmental Conditions:

Temperature (°C):	22 to 23
Relative Humidity (%):	38 to 39

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. All other emissions shown on the pre-scan plots were investigated and found to be ambient or >20 dB below the applicable limit or below the measurement system noise floor.
4. The emission shown on the 1 GHz to 4 GHz plot is the EUT fundamental.
5. 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.

Transmitter Radiated Emissions (continued)

Results: Peak / Bottom Channel

Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
4803.932	Horizontal	50.3	54.0	3.7	Complied

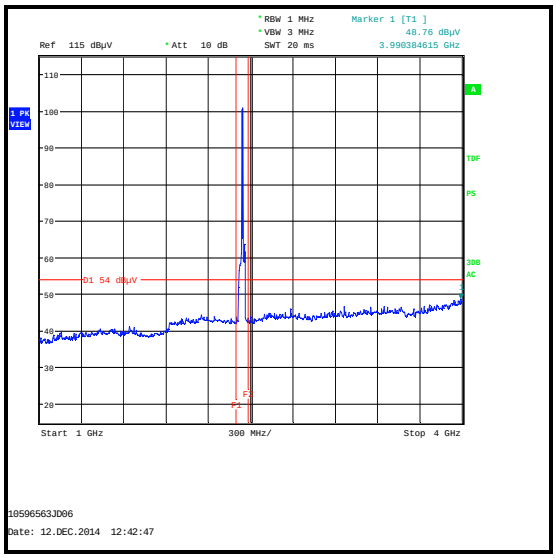
Results: Peak / Middle Channel

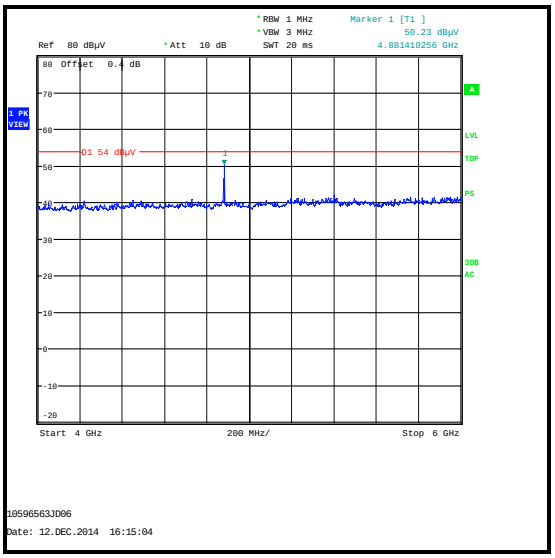
Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
4880.497	Horizontal	51.3	54.0	2.7	Complied

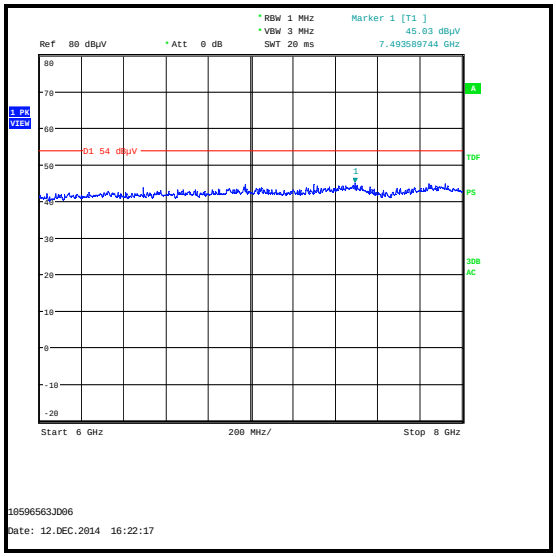
Results: Peak / Top Channel

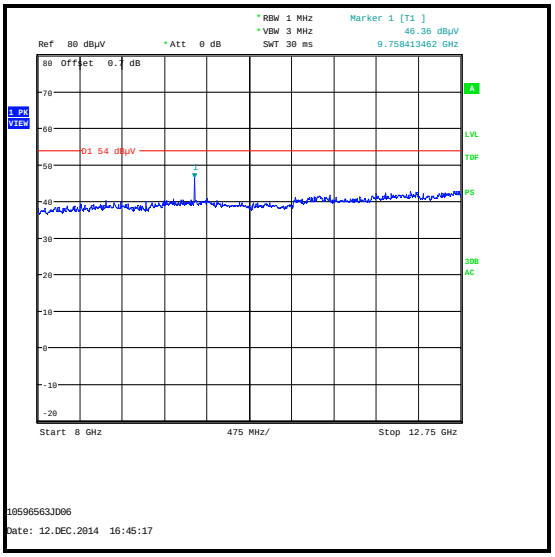
Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
4960.282	Horizontal	50.9	54.0	3.1	Complied

Transmitter Radiated Emissions (continued)

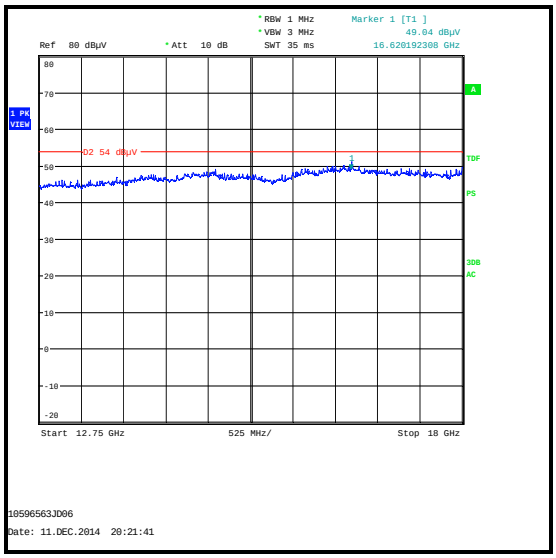


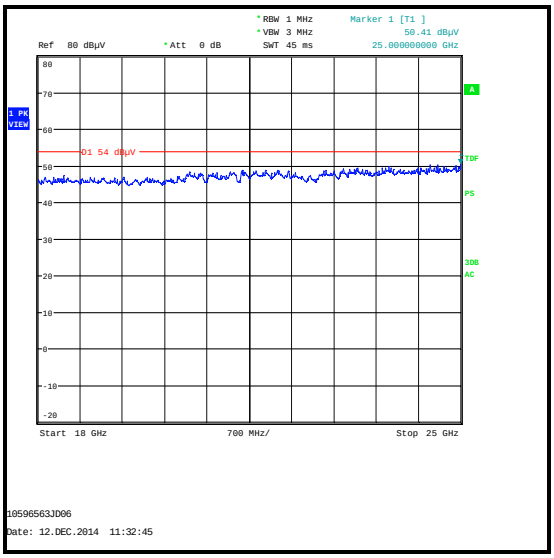






Transmitter Radiated Emissions (continued)





Note: The above 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	Not stated	14 Mar 2015	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	19 Dec 2014	12
A1818	Antenna	EMCO	3115	00075692	19 Dec 2014	12
A253	Antenna	Flann Microwave	12240-20	128	19 Dec 2014	12
A254	Antenna	Flann Microwave	14240-20	139	19 Dec 2014	12
A255	Antenna	Flann Microwave	16240-20	519	19 Dec 2014	12
A256	Antenna	Flann Microwave	18240-20	400	19 Dec 2014	12
A436	Antenna	Flann Microwave	20240-20	330	19 Dec 2014	12
M1874	Test Receiver	Rohde & Schwarz	ESU26	100553	13 May 2015	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	18 May 2015	12
A1975	HP Filter	AtlanTecRF	AFH-03000	090424010	12 Apr 2015	12
A1980	HP Filter	AtlanTecRF	AFH-06000	09110900303	12 Apr 2015	12

5.2.5. Transmitter Band Edge Radiated Emissions

Test Summary:

Test Engineer:	Keith Tucker	**Test Dates:**	12 December 2014, 17 December 2014 & 16 January 2015
Test Sample Serial Number:	Radiated Sample		

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

Environmental Conditions:

Temperature (°C):	22 to 23
Relative Humidity (%):	32 to 40

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 maximum peak conducted output power was measured with a peak detector. In accordance with FCC KDB 558074 Section 9.1.1, the lower band edge measurement was also performed with a peak detector and the -20 dBc limit applied.
3. There is a restricted band 10 MHz below the lower band edge. The test receiver was set up as follows: the RBW set to 1 MHz, the VBW set to 3 MHz, with the sweep time set to auto couple. Peak and average measurements were performed with their respective detectors. Markers were placed on the highest point on each trace.
4. * 20 dBc limit.
5. The emissions at 2326.538 MHz and 2382.949 MHz were investigated and found to be cyclical, pulsed emissions of varying durations. Both emissions were measured and the duty cycle calculated in accordance with C63.10 Section 7.5. A duty cycle correction factor of 31.8 dB was subtracted from the peak level to obtain the average level.
6. The reference level was set to 115 dBµV in order to achieve sufficient headroom.

Transmitter Band Edge Radiated Emissions (continued)

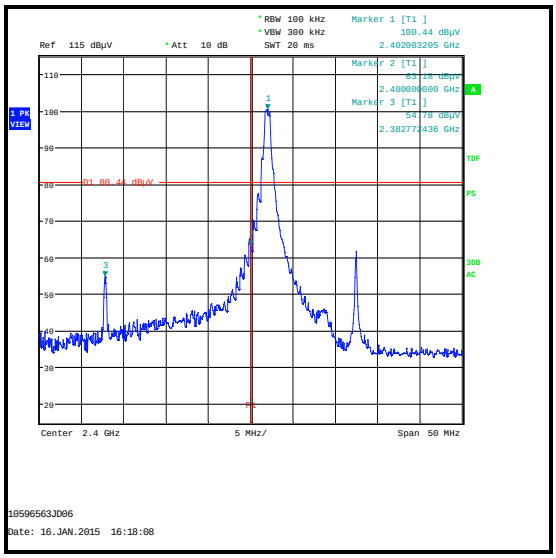
Results: Peak

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2326.538	62.9	74.0	11.1	Complied
2382.949	63.2	74.0	10.8	Complied
2400.000	63.2	80.4*	17.2	Complied
2483.500	67.4	74.0	6.6	Complied
2505.942	61.2	80.9*	19.7	Complied

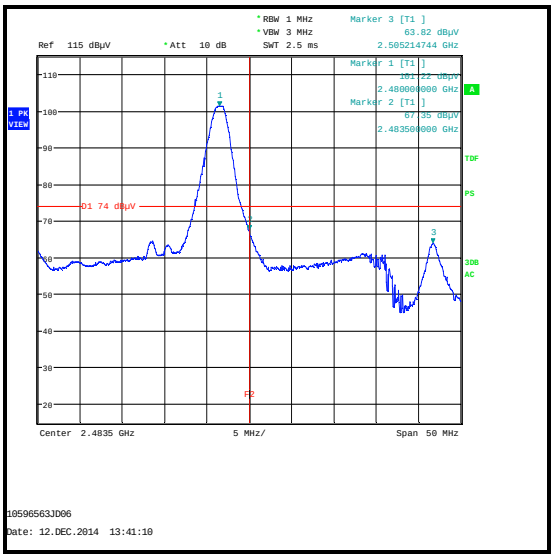
Results: Average

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2326.538	31.1	54.0	22.9	Complied
2382.949	31.4	54.0	22.6	Complied
2483.500	39.1	54.0	14.9	Complied

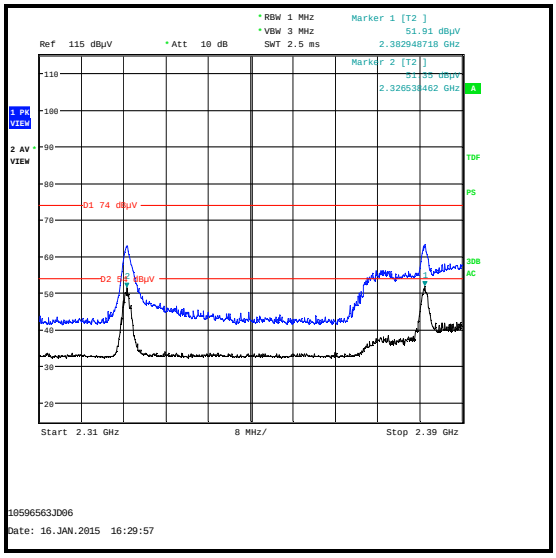
Transmitter Band Edge Radiated Emissions (continued)



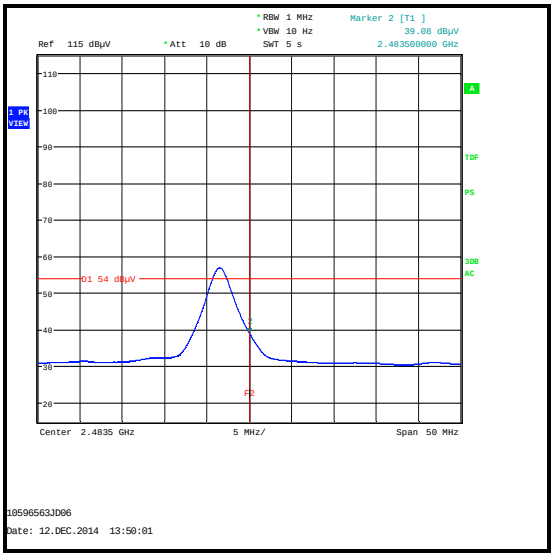
Lower Band Edge Peak Measurement



Upper Band Edge Peak Measurement



2310-2390 MHz Restricted Band Measurement



Upper Band Edge Average Measurement

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	13 Feb 2015	12
A1818	Antenna	EMCO	3115	00075692	20 Dec 2015	12
M1874	Test Receiver	Rohde & Schwarz	ESU26	100553	13 May 2015	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	18 May 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 measured (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
Conducted Maximum Peak Output Power	2.4 GHz to 2.4835 GHz	95%	±1.13 dB
Minimum 6 dB Bandwidth	2.4 GHz to 2.4835 GHz	95%	±3.92 %
Radiated Spurious Emissions	30 MHz to 1 GHz	95%	±5.65 dB
Radiated Spurious Emissions	1 GHz to 26.5 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

---END OF REPORT---