TEST REPORT

Test Report No. : UL-RPT-RP10648417JD02B

Manufacturer	:	Pasce Ltd
Model No.	:	MRBT
FCC ID	:	2AD65MRBT
Technology	:	*Bluetooth* – Low Energy
Test Standard(s)	:	FCC Parts 15.109, 15.209(a) & 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: 12 February 2015

Checked by:

Sarah Williams
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.

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1. Customer Information

Company Name:	Pasce Ltd
Address:	10 Backfields Lane Bristol BS2 8QW United Kingdom

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
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:	30 January 2015 to 06 February 2015

2.2. Summary of Test Results

FCC Reference (47CFR)	Measurement	Result
Part 15.109	Receiver/Idle Mode Radiated 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:	Minirig
Model Name or Number:	MRBT
Test Sample MAC Address:	00126f7349bd *(Conducted sample)*
Hardware Version Number:	V5E-2B
Software Version Number:	1.8 5.6 RC6 - TBC
FCC ID:	2AD65MRBT

Brand Name:	Minirig
Model Name or Number:	MRBT
Test Sample MAC Address:	00126f734979 *(Radiated sample)*
Hardware Version Number:	V5E-2B
Software Version Number:	1.8 5.6 RC6 - TBC
FCC ID:	2AD65MRBT

3.2. Description of EUT

The equipment under test was a portable *Bluetooth* speaker.

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 Mbps		
Power Supply Requirement(s):	Nominal	5 VDC	
Maximum Conducted Output Power:	6.4 dBm		
Antenna Gain:	1.9 dBi		
Transmit Frequency Range:	2400 MHz to 2483.5 MHz		
Transmit Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	0	2402
	Middle	19	2440
	Top	39	2480
Receive Frequency Range:	2400 MHz to 2483.5 MHz		
Receive Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	0	2402
	Top	39	2480

3.5. Support Equipment

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

Description:	Test Laptop
Brand Name:	Dell
Model Name or Number:	Latitude D610
Serial Number:	B7Y0T1J

Description:	Level Shifter
Brand Name:	CSR
Model Name or Number:	DEV-PC-1309C
Serial Number:	Not marked or stated

Description:	USB/Serial Diagnostic Cable
Brand Name:	Not marked or stated
Model Name or Number:	Not marked or stated
Serial Number:	Not marked or stated

Description:	Audio Cable
Brand Name:	Minirig
Model Name or Number:	Not marked or stated
Serial Number:	Not marked or stated

Description:	MP3 Player
Brand Name:	Creative
Model Name or Number:	Zen Stone Plus 2 GB
Serial Number:	MAPF 2191 745M 1946 8N

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

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

- Receive/Idle Mode.
- Transmitting at maximum power in *Bluetooth* LE mode with modulation, maximum possible data length available and Pseudorandom Bit Sequence 9.

4.2. Configuration and Peripherals

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

- The EUT was powered from its internal battery whilst charging via a USB diagnostic cable during all tests.
- The EUT was controlled with a test laptop and a third party test software application using commands supplied by the customer. Channels, packet lengths and other settings were then set using this software application as required.
- For all transmitter tests, the CONFIG TX POWER setting was set to 4 dBm & the EXT & INT pre-amp gains were set to 255 & 47 respectively on the test application.
- Radiated spurious emissions were performed with an MP3 player connected to the AUX port of the EUT whilst streaming pink noise at 80% volume as this was considered to be representative of normal operation. This also exercised the only other port on the EUT.

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:	Sandeep Bharat	**Test Date:**	06 February 2015
Test Sample MAC Address:	00126f734979		

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):	23
Relative Humidity (%):	35

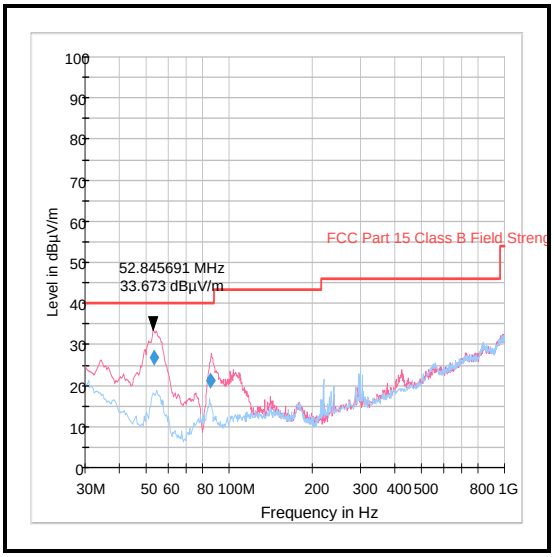
Note(s):

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 Polarisation	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
53.376	Vertical	26.9	40.0	13.1	Complied
85.582	Vertical	21.2	40.0	18.8	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)
M1656	Thermohygrometer	JM Handelspunkt	30.5015.13	None stated	14 Mar 2015	12
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	26 Mar 2015	12
A490	Antenna	Chase	CBL6111A	1590	29 Apr 2015	12
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	15 Feb 2015	12
G0543	Amplifier	Sonoma	310N	230801	04 Mar 2015	3
A1834	Attenuator	Hewlett Packard	8491B	10444	Calibrated before use	-

Receiver/Idle Mode Radiated Spurious Emissions (continued)

Test Summary:

Test Engineer:	Sandeep Bharat	**Test Dates:**	03 February 2015 & 05 February 2015
Test Sample Serial Number:	00126f734979		

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 12.75 GHz

Environmental Conditions:

Temperature (°C):	22 to 23
Relative Humidity (%):	32 to 36

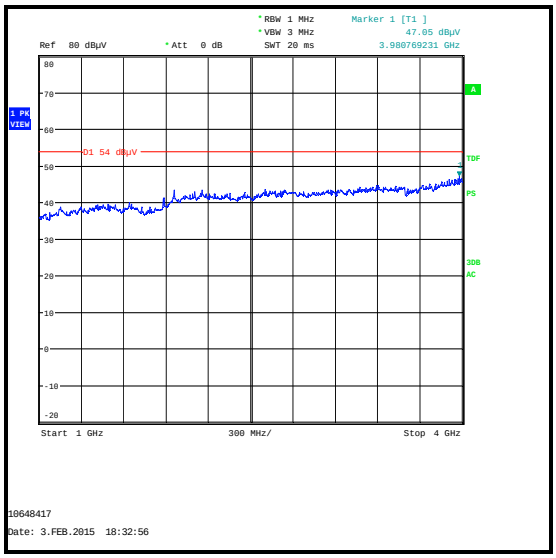
Note(s):

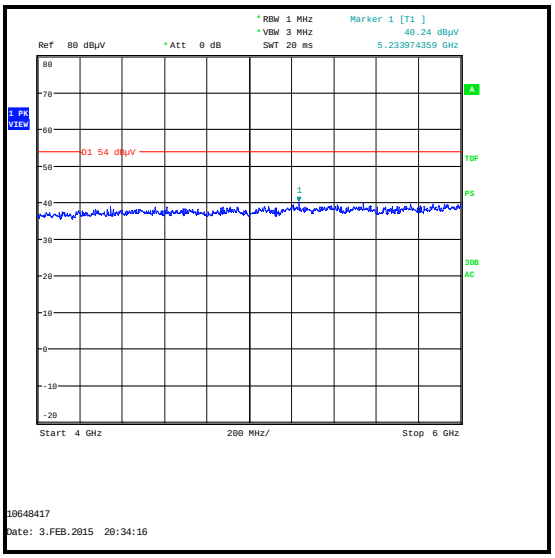
1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
2. No spurious emissions were detected above the noise floor of the measuring receiver therefore the highest peak noise floor reading of the measuring receiver was recorded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

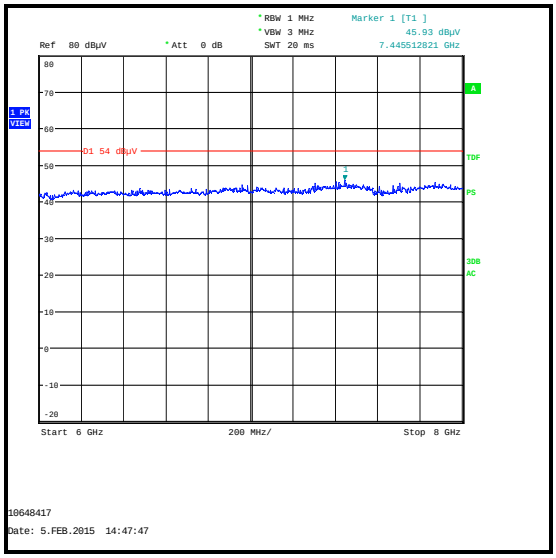
Results:

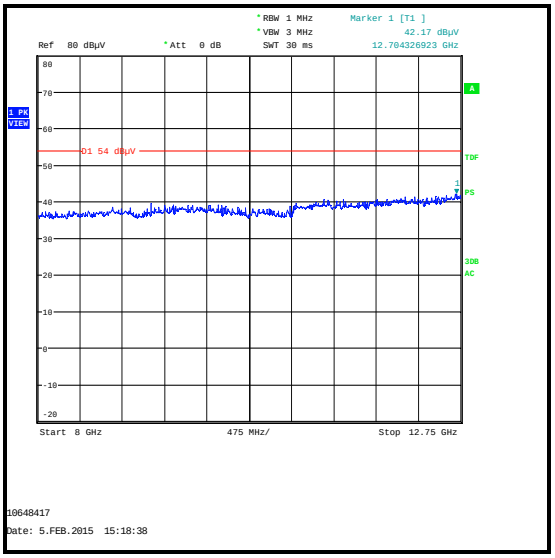
Frequency (MHz)	Antenna Polarisation	Peak Level (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
3980.769	Vertical	47.1	54.0	6.9	Complied

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	None stated	14 Mar 2015	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	13 Feb 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 Microwave	12240-20	128	20 Dec 2015	12
A254	Antenna	Flann Microwave	14240-20	139	20 Dec 2015	12
A255	Antenna	Flann Microwave	16240-20	519	20 Dec 2015	12

5.2.2. Transmitter Minimum 6 dB Bandwidth

Test Summary:

Test Engineer:	Sandeep Bharat	**Test Date:**	30 January 2015
Test Sample MAC Address:	00126f7349bd		

FCC Reference:	Part 15.247(a)(2)
Test Method Used:	As detailed in FCC KDB 558074 Section 8.2 Option 2

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	29

Note(s):

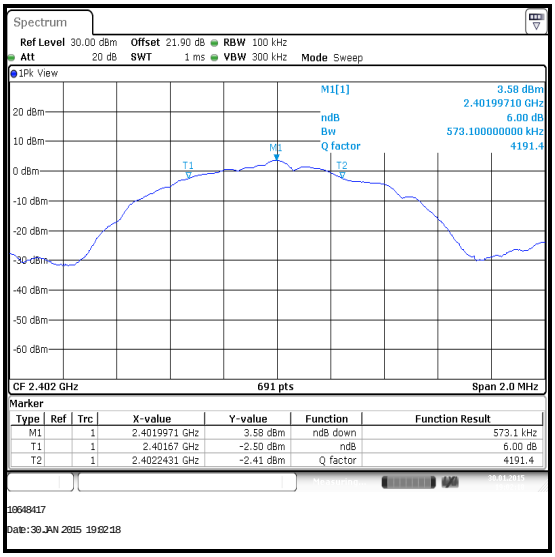
1. 6 dB DTS bandwidth tests were performed using a spectrum analyser in accordance with FCC KDB 558074 Section 8.2 Option 2 measurement procedure.
2. A spectrum analyser was connected to the RF port on the EUT using suitable attenuation and RF cable.

Results:

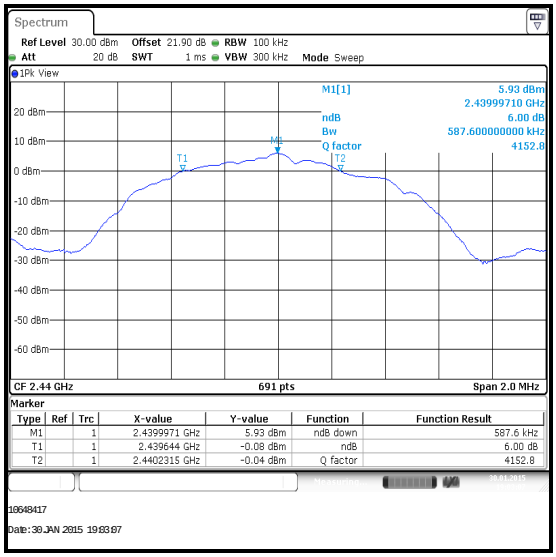
Channel	6 dB Bandwidth (kHz)	Limit (kHz)	Margin (kHz)	Result
Bottom	573.100	≥500	73.100	Complied
Middle	587.600	≥500	87.600	Complied
Top	590.400	≥500	90.400	Complied

Transmitter Minimum 6 dB Bandwidth (continued)

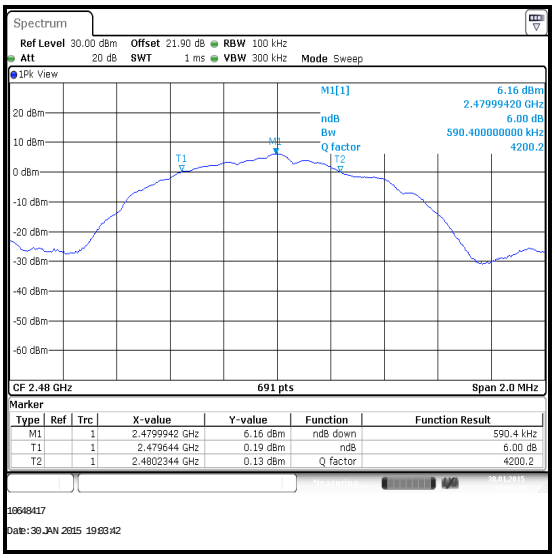
Results:



Bottom Channel



Middle Channel



Top Channel

Test Equipment Used:

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1658	Thermohygrometer	JM Handelspunkt	30.5015.13	None Stated	14 Mar 2015	12
A2534	Directional Coupler	AtlanTecRF	CDC-003060-20	14041701718	Calibrated before use	-
M1873	Signal Analyser	Rohde & Schwarz	FSV 30	103074	15 May 2015	12

5.2.3. Transmitter Maximum Peak Output Power

Test Summary:

Test Engineer:	Sandeep Bharat	**Test Date:**	30 January 2015
Test Sample MAC Address:	00126f7349bd		

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

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	29

Note(s):

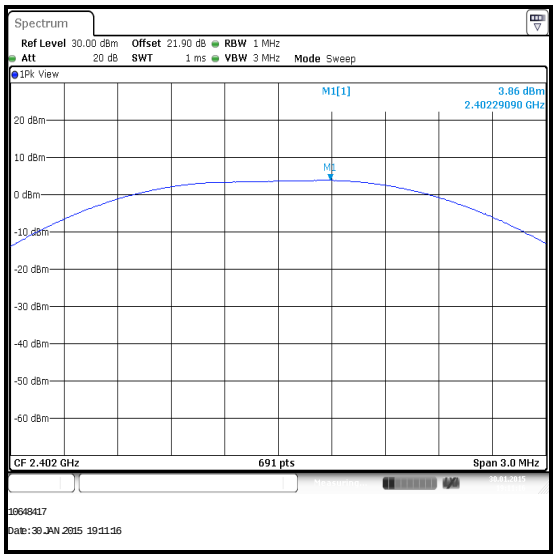
1. Conducted power tests were performed using a spectrum analyser in accordance with FCC KDB 558074 Section 9.1.1 with the RBW > *DTS bandwidth* procedure. A resolution bandwidth of 1 MHz was used and the video bandwidth was set to 3 MHz.
2. A spectrum analyser was connected to the RF port on the EUT using suitable attenuation and RF cable. An RF level offset was entered on the spectrum analyser to compensate for the loss of the attenuator and RF cable.
3. The declared antenna gain was added to the conducted peak power to obtain the EIRP.

Results:

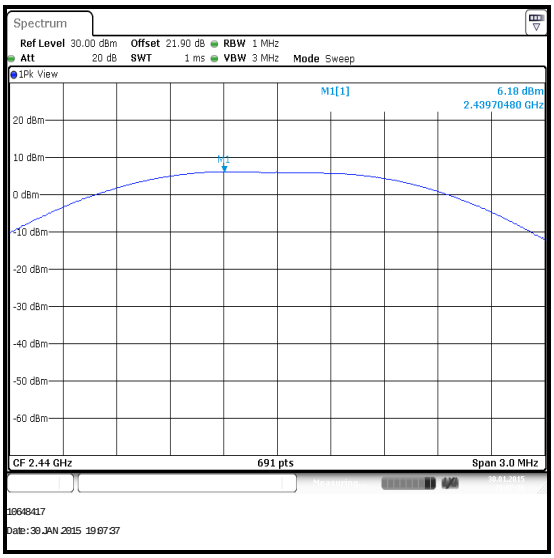
Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	3.9	30.0	26.1	Complied
Middle	6.2	30.0	23.8	Complied
Top	6.4	30.0	23.6	Complied

Channel	Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	3.9	1.9	5.8	36.0	30.2	Complied
Middle	6.2	1.9	8.1	36.0	27.9	Complied
Top	6.4	1.9	8.3	36.0	27.7	Complied

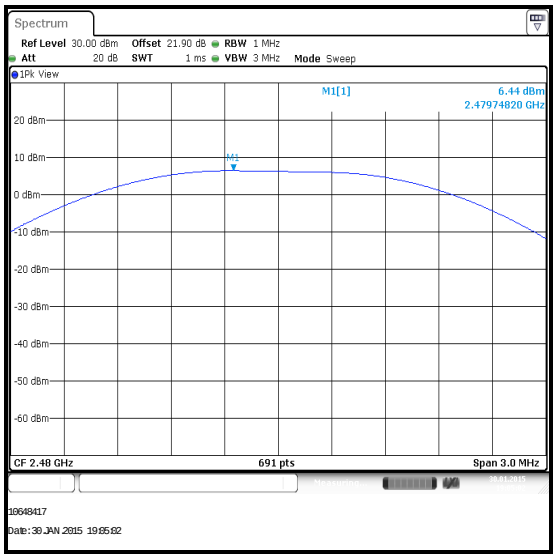
Transmitter Maximum Peak Output Power (continued)



Bottom Channel



Middle Channel



Top Channel

Test Equipment Used:

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1658	Thermohygrometer	JM Handelspunkt	30.5015.13	None Stated	14 Mar 2015	12
A2534	Directional Coupler	AtlanTecRF	CDC-003060-20	14041701718	Calibrated before use	-
M1873	Signal Analyser	Rohde & Schwarz	FSV 30	103074	15 May 2015	12

5.2.4. Transmitter Radiated Emissions

Test Summary:

Test Engineer:	Sandeep Bharat	**Test Date:**	06 February 2015
Test Sample MAC Address:	00126f734979		

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):	23
Relative Humidity (%):	35

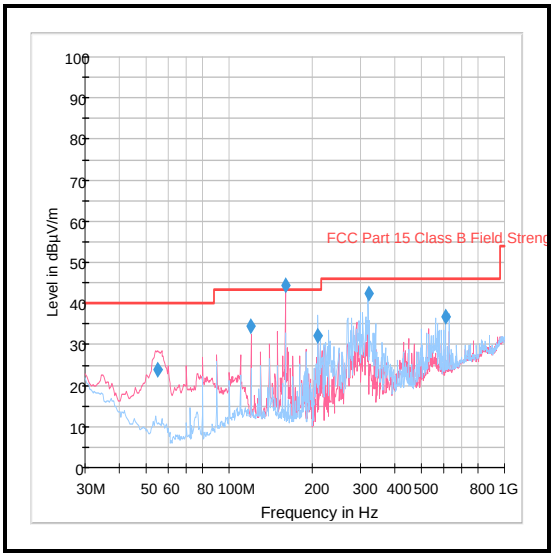
Note(s):

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. All other emissions shown on the pre-scans were investigated and found to be ambient, or > 20 dB below the appropriate limit or below the noise floor of the measurement system.
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.

Results: Middle Channel

Frequency (MHz)	Antenna Polarisation	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
120.004	Vertical	34.3	43.5	9.2	Complied
610.028	Horizontal	36.7	46.0	9.3	Complied

Transmitter Radiated 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)
M1656	Thermohygrometer	JM Handelspunkt	30.5015.13	None stated	14 Mar 2015	12
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	26 Mar 2015	12
A490	Antenna	Chase	CBL6111A	1590	29 Apr 2015	12
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	15 Feb 2015	12
G0543	Amplifier	Sonoma	310N	230801	04 Mar 2015	3
A1834	Attenuator	Hewlett Packard	8491B	10444	Calibrated before use	-

Transmitter Radiated Emissions (continued)

Test Summary:

Test Engineer:	Sandeep Bharat	**Test Dates:**	03 February 2015 to 05 February 2015
Test Sample MAC Address:	00126f734979		

FCC Reference:	Parts 15.247(d) & 15.209(a)
Test Method Used:	As detailed in FCC KDB 558074 Sections 11 & 12 referencing ANSI C63.10 Sections 6.3 and 6.6 and ANSI C63.4
Frequency Range	1 GHz to 25 GHz

Environmental Conditions:

Temperature (°C):	22 to 23
Relative Humidity (%):	32 to 36

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. The emission shown on the 1 GHz to 4 GHz plot is the EUT fundamental.
4. *In accordance with ANSI C63.10 Section 6.6.4.2 (Note 1), if the peak measured value complies with the average limit, it is unnecessary to perform an average measurement.
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.
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.

Transmitter Radiated Emissions (continued)

Results: Peak / Bottom Channel

Frequency (MHz)	Antenna Polarisation	Peak Level (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
4804.208	Vertical	53.0	54.0*	1.0	Complied

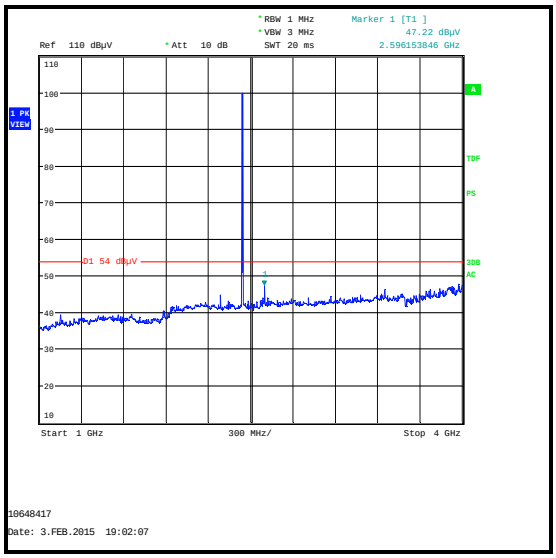
Results: Peak / Middle Channel

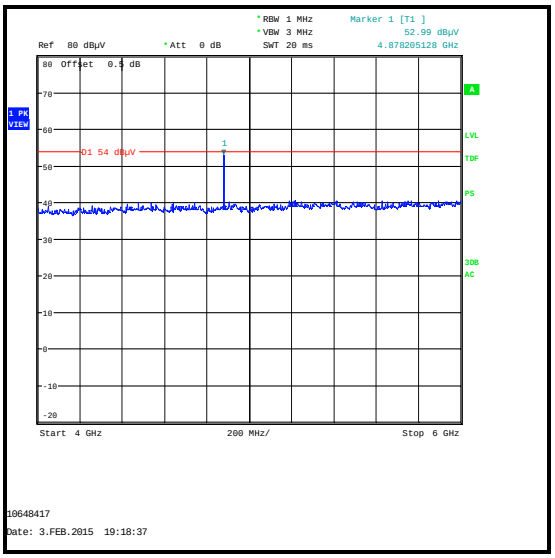
Frequency (MHz)	Antenna Polarisation	Peak Level (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
4879.295	Vertical	53.5	54.0*	0.5	Complied

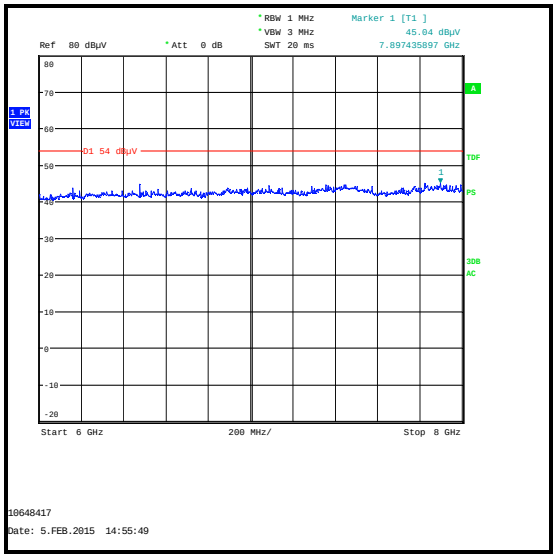
Results: Peak / Top Channel

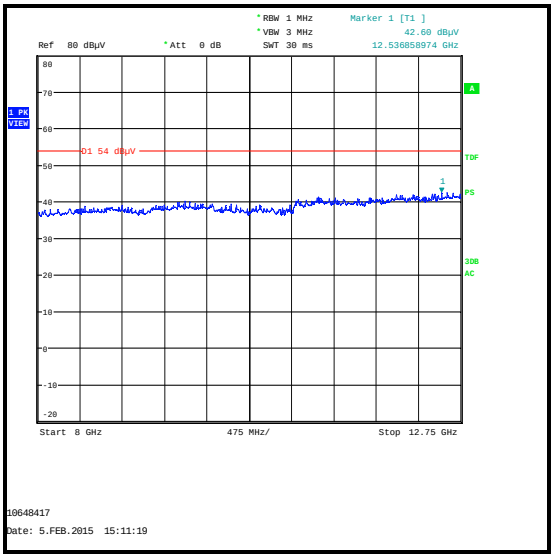
Frequency (MHz)	Antenna Polarisation	Peak Level (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
4959.327	Vertical	52.4	54.0*	1.6	Complied

Transmitter Radiated Emissions (continued)

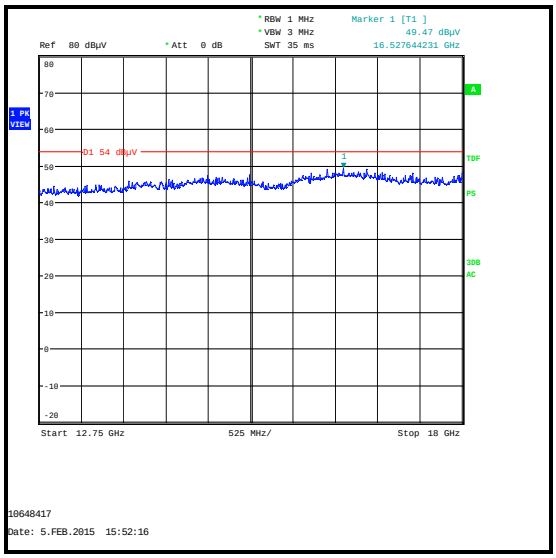


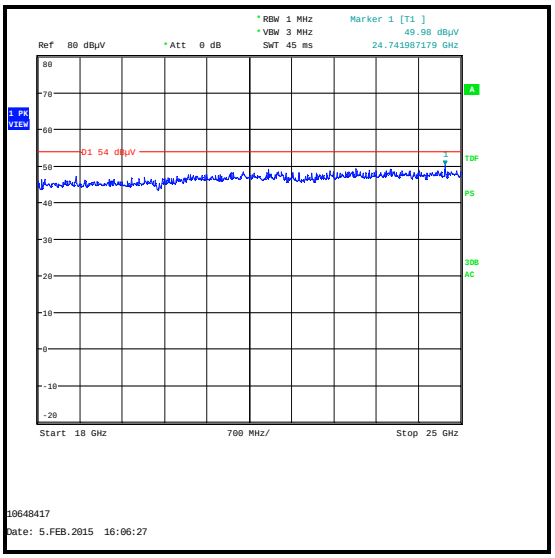






Transmitter Radiated Emissions (continued)





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	None stated	14 Mar 2015	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	13 Feb 2015	12
M1874	Test Receiver	Rohde & Schwarz	ESU26	100553	13 May 2015	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	21 Dec 2015	12
A1975	High Pass Filter	AtlanTecRF	AFH-03000	090424010	12 Apr 2015	12
A1818	Antenna	EMCO	3115	00075692	20 Dec 2015	12
A253	Antenna	Flann Microwave	12240-20	128	20 Dec 2015	12
A254	Antenna	Flann Microwave	14240-20	139	20 Dec 2015	12
A255	Antenna	Flann Microwave	16240-20	519	20 Dec 2015	12
A256	Antenna	Flann Microwave	18240-20	400	20 Dec 2015	12
A436	Antenna	Flann Microwave	20240-20	330	21 Dec 2015	12

5.2.5. Transmitter Band Edge Radiated Emissions

Test Summary:

Test Engineer:	Sandeep Bharat	**Test Date:**	03 February 2015
Test Sample MAC Address:	00126f734979		

FCC Reference:	Parts 15.247(d) & 15.209(a)
Test Method Used:	As detailed in ANSI C63.10 Section 6.9.2 & KDB 558074 Section 11

Environmental Conditions:

Temperature (°C):	22
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. The maximum peak conducted output power was previously measured. In accordance with FCC KDB 558074 Section 11.1(a), the lower band edge measurement was 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.

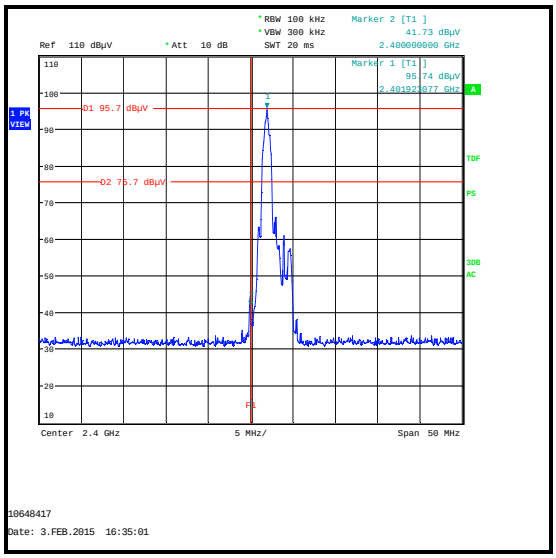
Results: Peak

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2375.385	42.9	74.0	31.1	Complied
2400.0	41.7	75.7*	34.0	Complied
2483.5	56.3	74.0	17.7	Complied

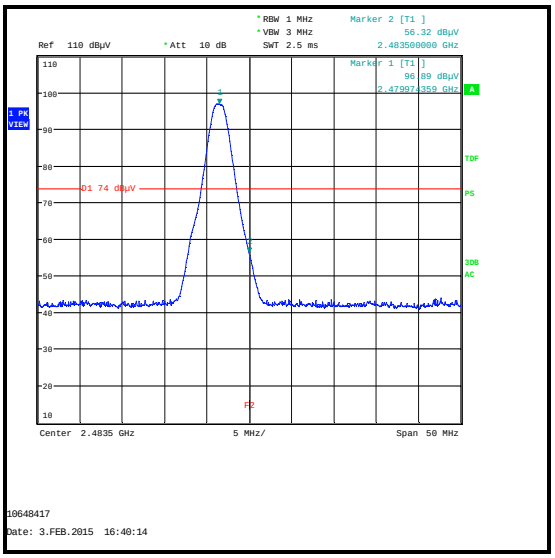
Results: Average

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2335.769	33.3	54.0	20.7	Complied
2483.5	42.5	54.0	11.5	Complied

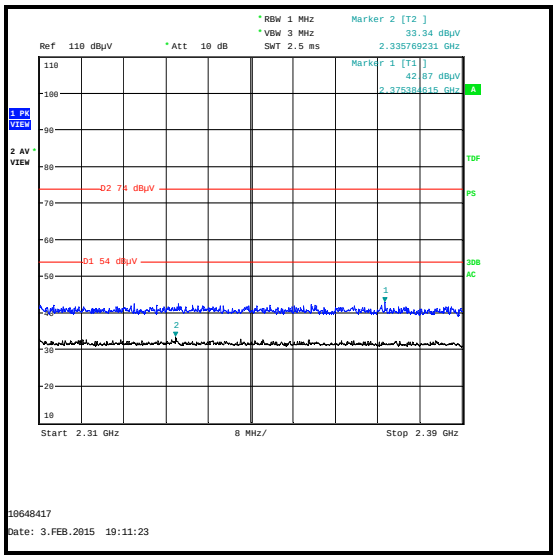
Transmitter Band Edge Radiated Emissions (continued)



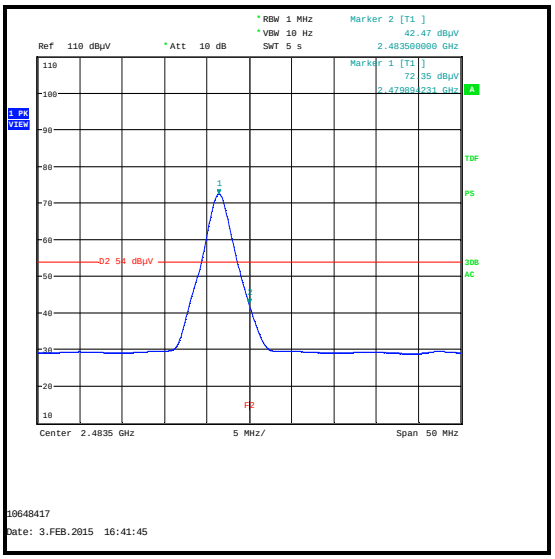
Lower Band Edge Peak Measurement



Upper Band Edge Peak Measurement



2310 MHz to 2390 MHz Restricted Band Plot



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	None stated	14 Mar 2015	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	13 Feb 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

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 ---