



Microsoft Mobile Oy

**Application
For
Certification**

FCC ID: PYADT-903

Wireless Charging Plate

Model: DT-903 (HW:1.8, MW:2.0, WLC FW:V0049, BT FW:V1.0)

2.4GHz Transceiver

Report No.: 140701012SZN-003

Prepared and Checked by:

Approved by:

Sign on file

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Project Engineer

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Date: *September 12, 2014*

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TRF No.: FCC 15C_TX_b

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MEASUREMENT/TECHNICAL REPORT

Microsoft Mobile Oy

Model: DT-903 (HW:1.8, MW:2.0, WLC FW:V0049, BT FW:V1.0)

FCC ID: PYADT-903

This report concerns (check one:) Original Grant ☒ Class II Change ☐

Equipment Type: DTS - Digital Transmission System

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes ☐ No ☒

If yes, defer until: _____
date

Company Name agrees to notify the Commission by: _____
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes ☐ No ☒

If no, assumed Part 15, Subpart C for intentional radiator – the new 47 CFR [10-1-13 Edition] provision.

Report prepared by:

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List of attached file

Exhibit type	File Description	filename
Test Report	Test Report	report.pdf
Operational Description	Technical Description	descri.pdf
Test Setup Photo	Radiated Emission	radiated photos.pdf
Test Setup Photo	Conducted Emission	conducted photos.pdf
External Photos	External Photo	external photos.pdf
Internal Photos	Internal Photo	internal photos.pdf
ID Label/Location Info	Label Artwork and Location	label.pdf
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
Users Manual	User Manual	manual.pdf
Cover Letter	Letter of Agency	letter of agency.pdf
RF Exposure	RF Exposure	RF Exposure.pdf

EXHIBIT 1

SUMMARY OF TEST RESULTS

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1.0 Summary of Test

**Microsoft Mobile Oy - MODEL:
DT-903 (HW:1.8, MW:2.0, WLC FW:V0049, BT FW:V1.0)**

FCC ID: PYADT-903

TEST	REFERENCE	RESULTS
Max. Output power	15.247(b)(3)	Pass
6 dB Bandwidth	15.247(a)(2)	Pass
Max. Power Density	15.247(e)	Pass
Out of Band Antenna Conducted Emission	15.247(d)	Pass
Radiated Emission in Restricted Bands	15.247(d)	Pass
AC Conducted Emission	15.207	Pass
Antenna Requirement	15.203	Pass (See Notes)

Notes: The EUT uses Integral Antenna which in accordance to Section 15.203 is considered sufficient to comply with the provisions of this section.

1.1 Related Submittal(s) Grants

This is an application for certification of Bluetooth 4.0 portion for the Wireless Charging Plate.

Remaining portion is subject to the following procedures:

1. Wireless Charging Function (110-150KHz): 140701012SZN-001

EXHIBIT 2

GENERAL DESCRIPTION

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2.0 **General Description**

2.1 Product Description

The equipment under test (EUT) is a Wireless Charging Plate with BT4.0 LE function operating in 2402-2480MHz. The EUT is powered by DC 5.2V. For more detail information pls. refer to the user manual.

Antenna Type: Integral antenna

Bluetooth Version: 4.0 BLE

Modulation Type: GFSK

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

2.2 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4: 2009 and DA 00-705. Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

2.3 Test Facility

The Semi-Anechoic chamber and shield room used to collect the radiated data and conducted data are **Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch** and located at 6F, Block D, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China. This test facility and site measurement data have been fully placed on file with the FCC (Registration Number: 242492).

EXHIBIT 3
SYSTEM TEST CONFIGURATION

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3.0 **System Test Configuration**

3.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.4: 2009.

The EUT was powered by DC 5.2V from adapter with AC 120V 60Hz input during the test. Only the worst case data was reported.

The simultaneous transmission spurious was tested, and all packets DH1, DH3 & DH5 mode in GFSK were tested, and only the worst data was reported in this report.

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. This step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The unit was placed in the rear of the table during test.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was placed on a turn table, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

3.2 EUT Exercising Software

No software is used.

3.3 Special Accessories

No Special Accessory attached.

3.4 Equipment Modification

Any modifications installed previous to testing by Microsoft Mobile Oy will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch.

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3.5 Measurement Uncertainty

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

3.6 Support Equipment List and Description

This product was tested in the following configuration:

Refer List:

Description	Manufacturer	Model No.
Mobile Phone	Nokia	Lumia 920
Adapter	Nokia	AC-60C

EXHIBIT 4
TEST RESULTS

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Applicant: Microsoft Mobile Oy

Date of Test: July 8, 2014

Model: DT-903 (HW:1.8, MW:2.0, WLC FW:V0049, BT FW:V1.0)

4.0 **Measurement Results**

4.1 Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b)(3):

The antenna port of the EUT was connected to the input of a broadband peak RF power meter. The power meter have a Resolution bandwidth that is greater than OBW and utilize a fast-responding diode detector. Power was read directly at the EUT antenna terminals.

For antennas with gains of 6 dBi or less, maximum allowed Transmitter output is 1 watt (+30 dBm).

Bluetooth 4.0 (Antenna Gain = 4.06dBi) (GFSK, 1Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2402	-3.51	0.45
Middle Channel: 2440	-4.05	0.39
High Channel: 2480	-4.85	0.33

Cable loss: 0.5 dB External Attenuation: 0 dB

Cable loss, external attenuation has been included in OFFSET function

EUT max. output level = -3.51dBm

For RF Exposure, the information is saved with filename: RF exposure.pdf.

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Applicant: Microsoft Mobile Oy

Date of Test: July 8, 2014

Model: DT-903 (HW:1.8, MW:2.0, WLC FW:V0049, BT FW:V1.0)

4.2 Minimum 6 dB RF Bandwidth, FCC Rule 15.247(a)(2):

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100 KHz according to FCC KDB 558074. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 6 dB lower than PEAK level. The 6dB bandwidth was determined from where the channel output spectrum intersected the display line.

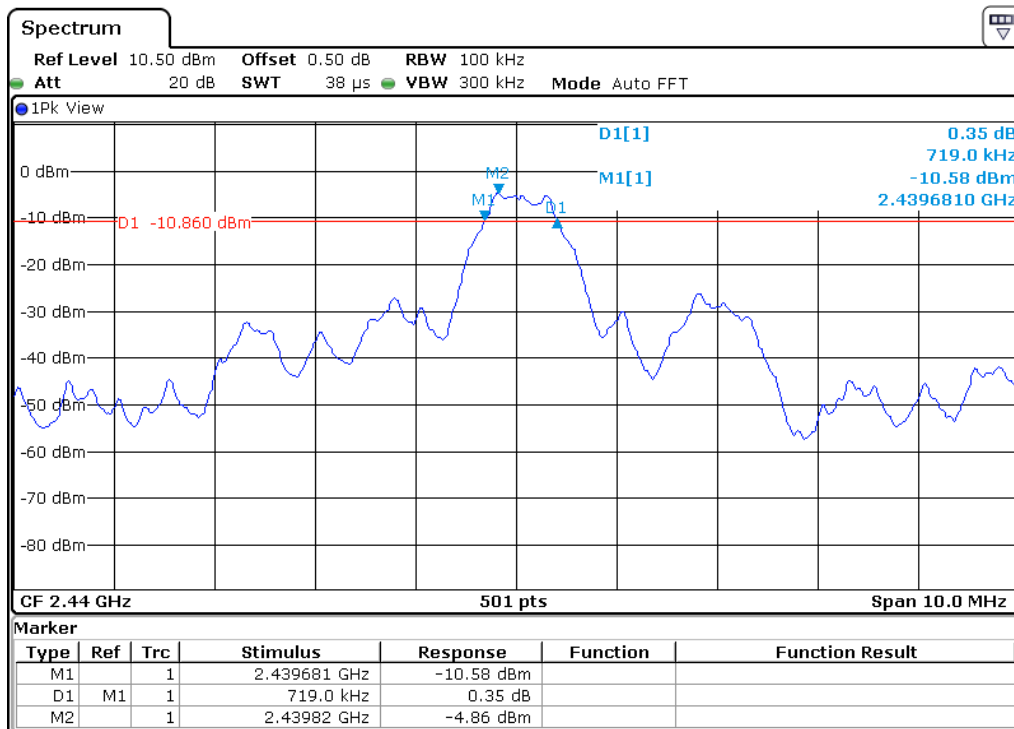
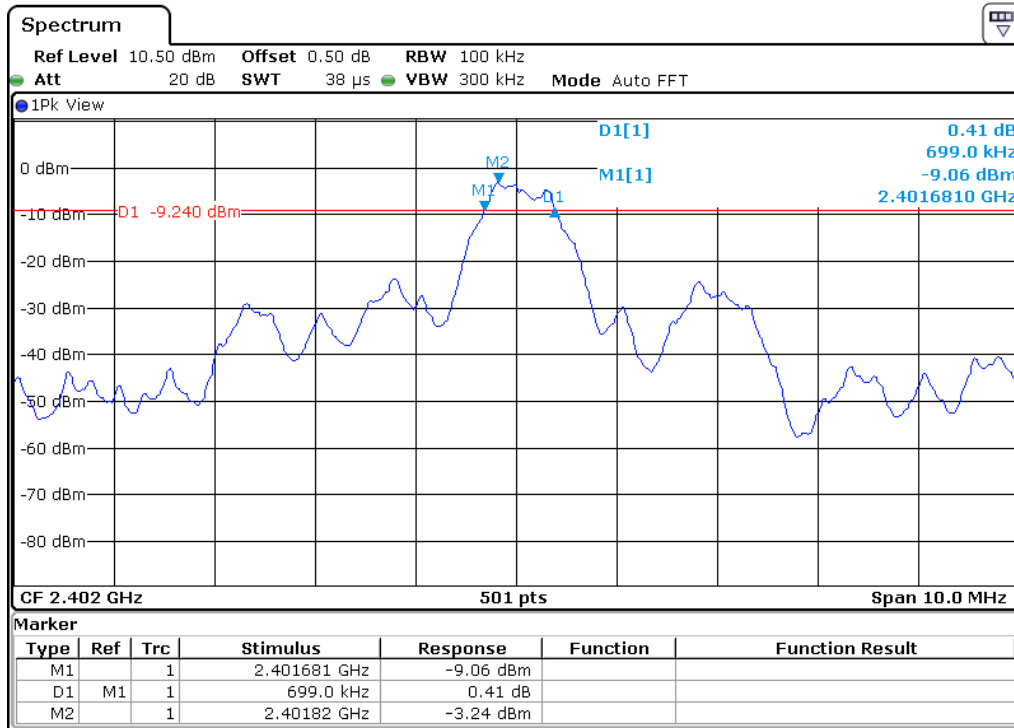
Limit: The 6 dB Bandwidth is at least 500 kHz.

Bluetooth 4.0 (GFSK, 1Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
Low Channel: 2402	0.699
Middle Channel: 2440	0.719
High Channel: 2480	0.739

The test plots are attached as below.

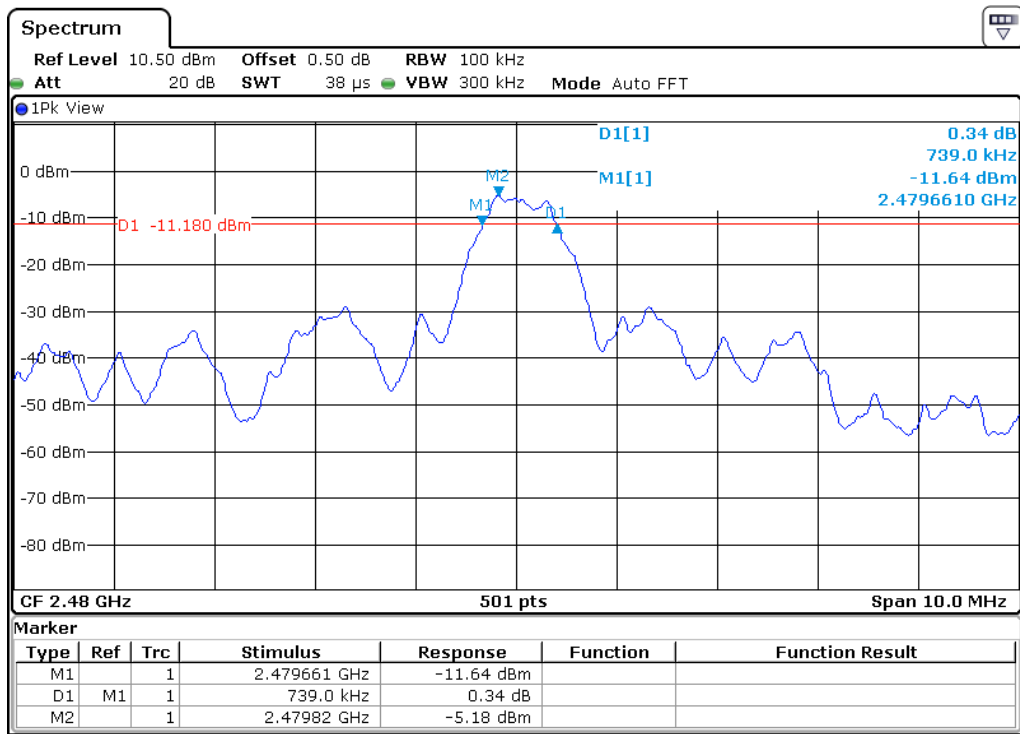
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GFSK:



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Applicant: Microsoft Mobile Oy

Date of Test: July 8, 2014

Model: DT-903 (HW:1.8, MW:2.0, WLC FW:V0049, BT FW:V1.0)

4.3 Maximum Power Density Reading, FCC Rule 15.247(e):

The Measurement Procedure PKPSD was set according to the FCC KDB 558074.

Antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

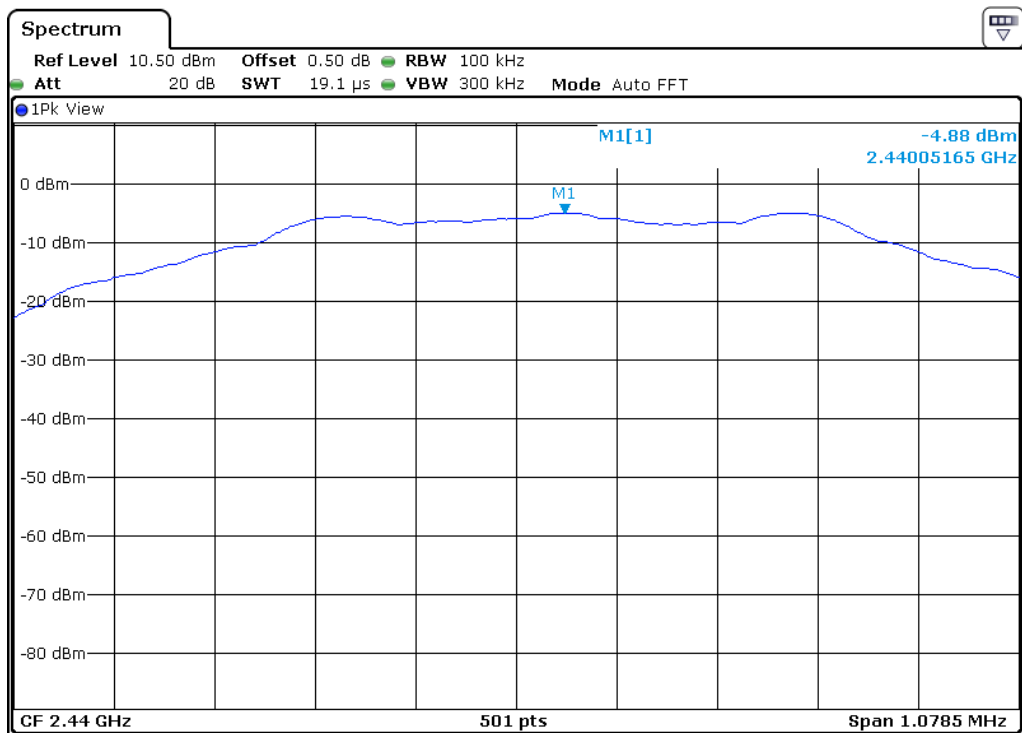
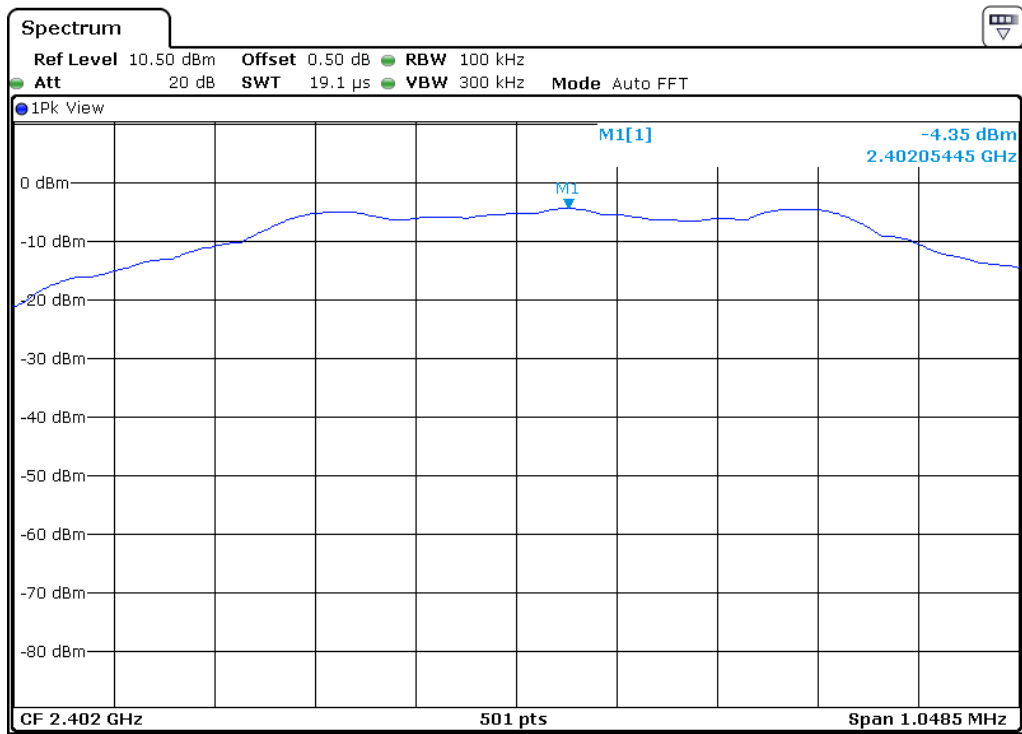
Limit: The Power Density does not exceed 8dBm/ 3 kHz.

Bluetooth 4.0 (GFSK, 1Mbps)	
Frequency (MHz)	Power Density with RBW 100KHz (dBm)
Low Channel: 2402	-4.35
Middle Channel: 2440	-4.88
High Channel: 2480	-5.52

The test plots are attached as below.

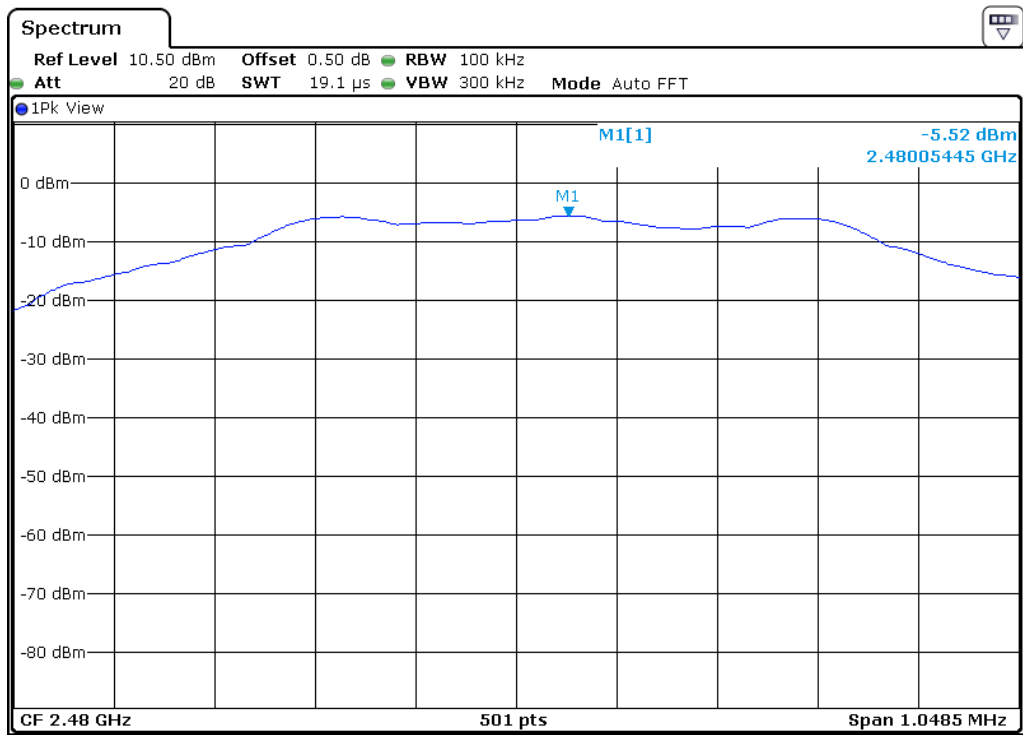
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GFSK:



TRF No.: FCC 15C_TX_b
FCC ID: PYADT-903

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Applicant: Microsoft Mobile Oy

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Model: DT-903 (HW:1.8, MW:2.0, WLC FW:V0049, BT FW:V1.0)

4.4 Out of Band Conducted Emissions, FCC Rule 15.247(d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. The Measurement Procedure was set according to the FCC KDB 558074.

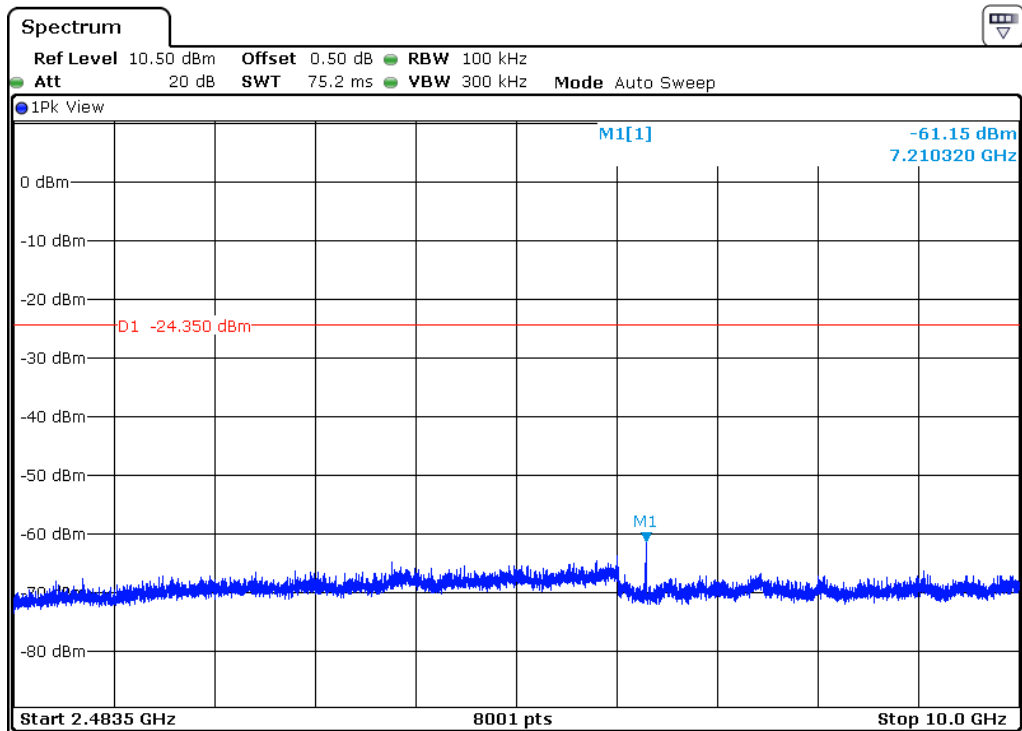
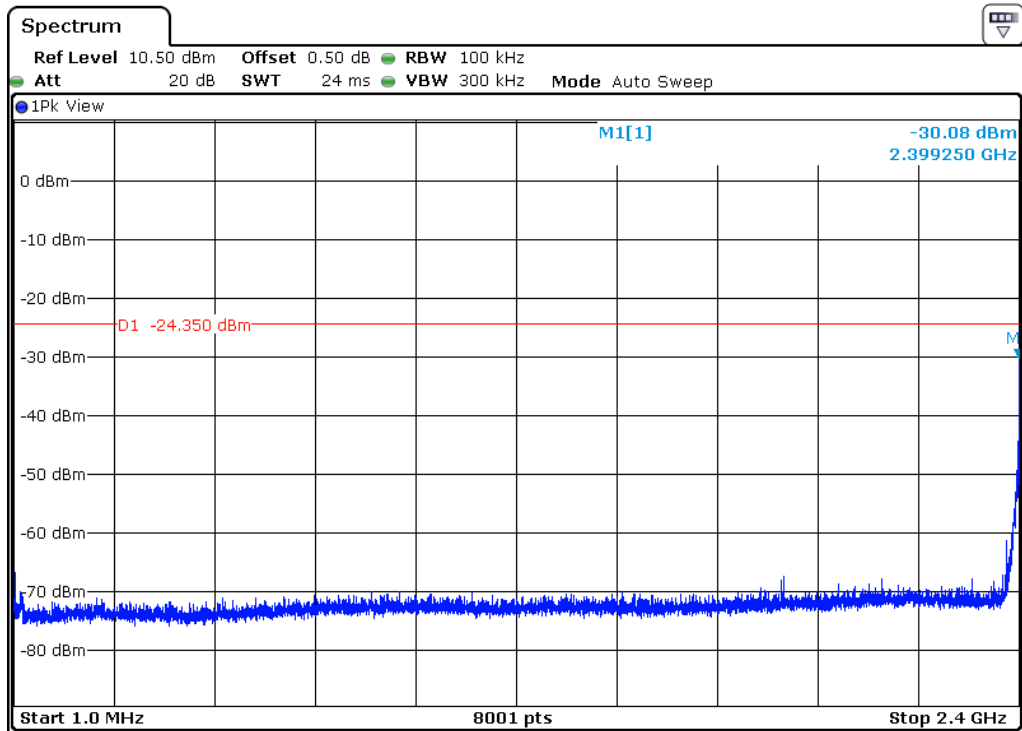
Refer to the attached test plots for out of band conducted emissions data with rate of 1Mbps for Bluetooth 4.0.

The test plots showed all spurious emission up to the tenth harmonic was measured and they were found to be at least 20 dB below the highest level of the desired power in the passband.

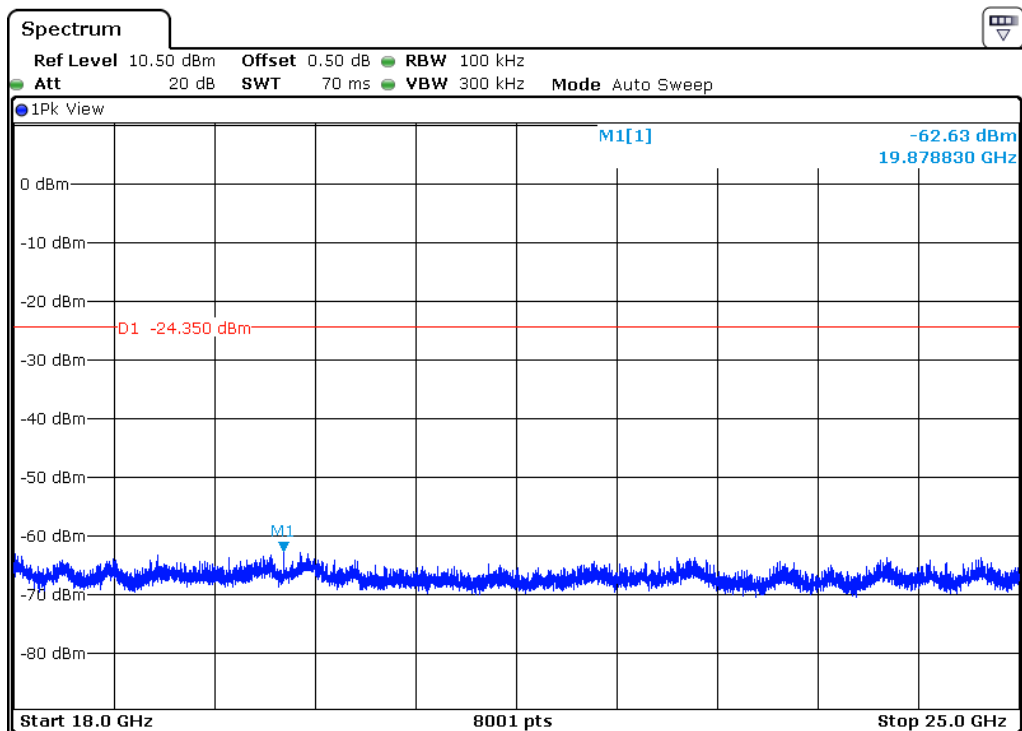
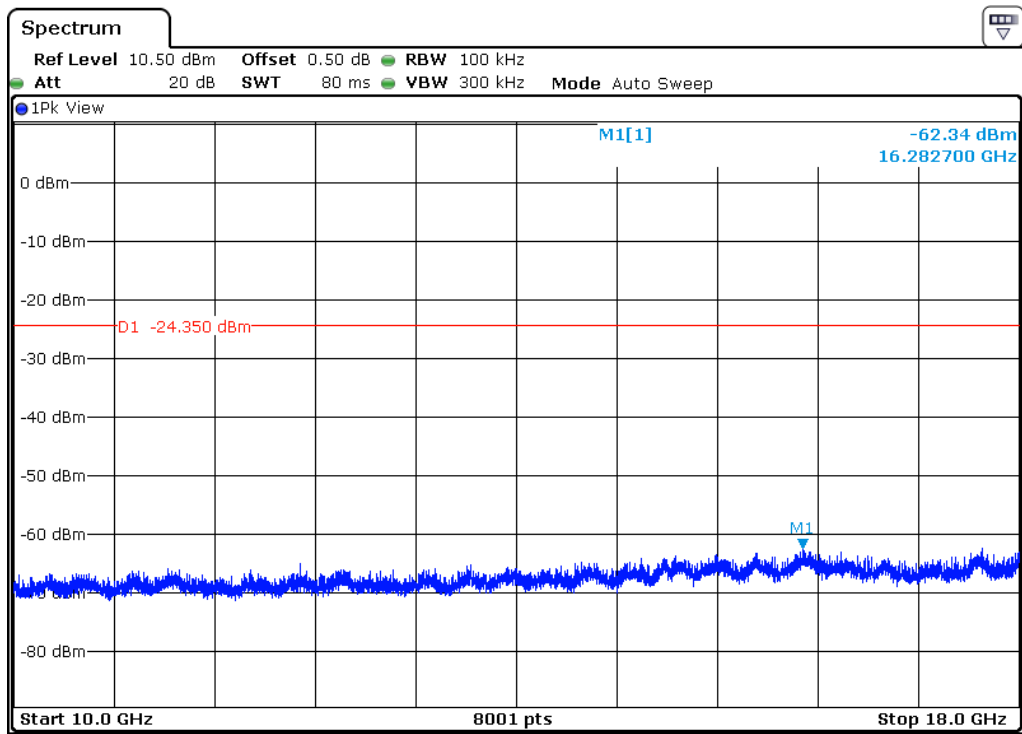
The test plots are attached as below.

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Channel 0 (2402MHz) Reference Level: -4.35 dBm

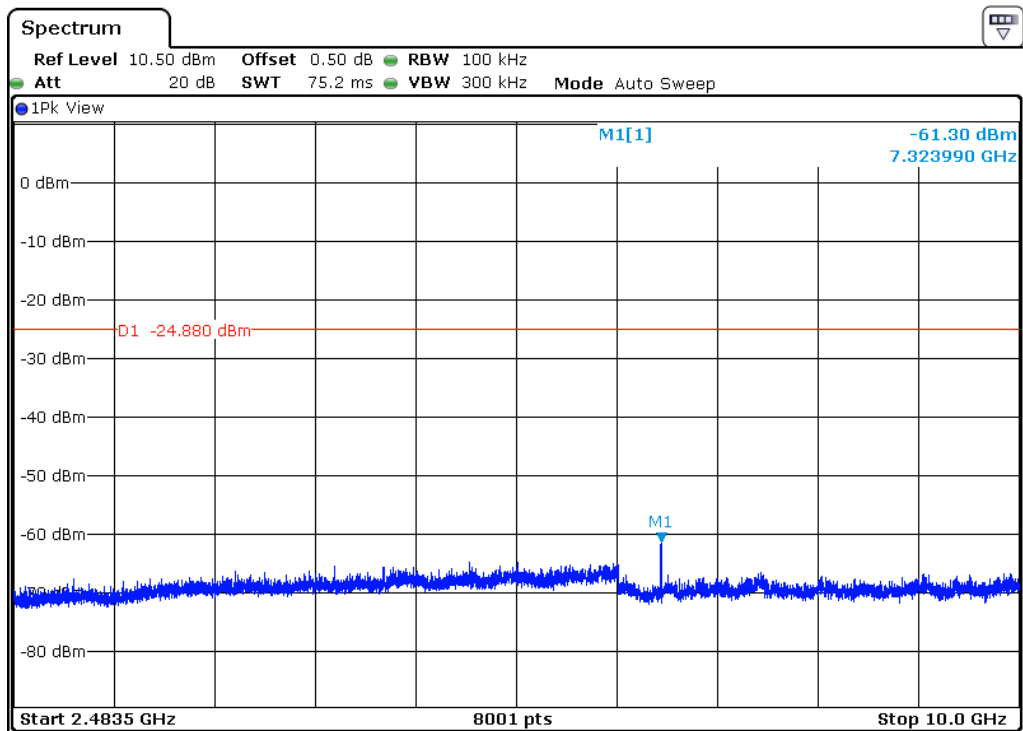
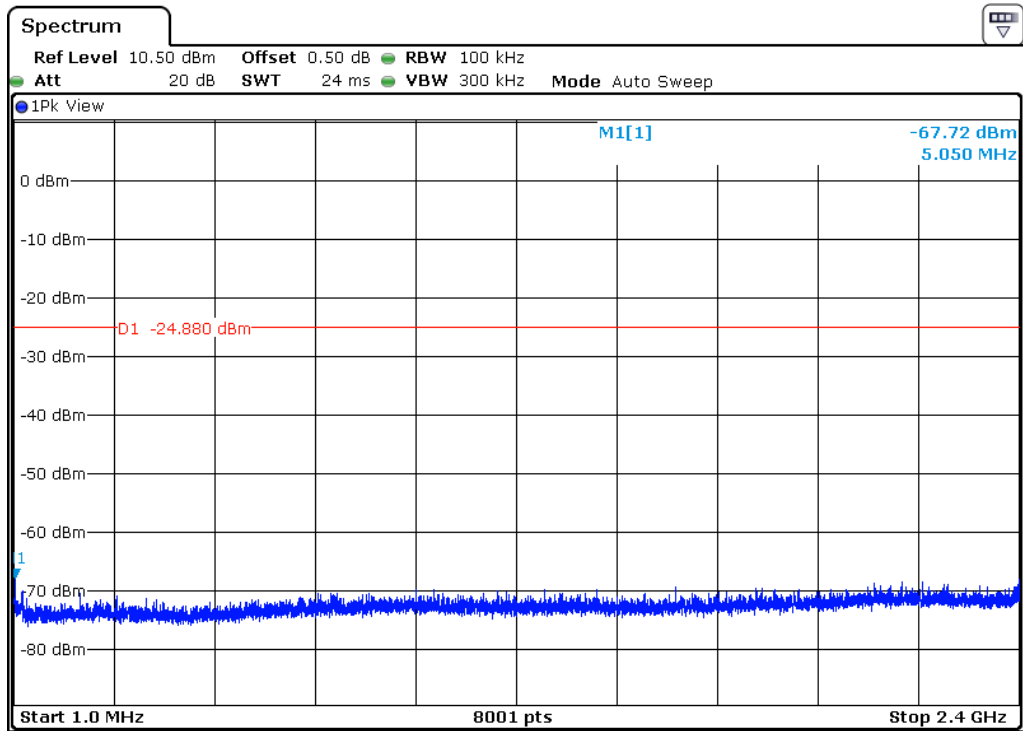


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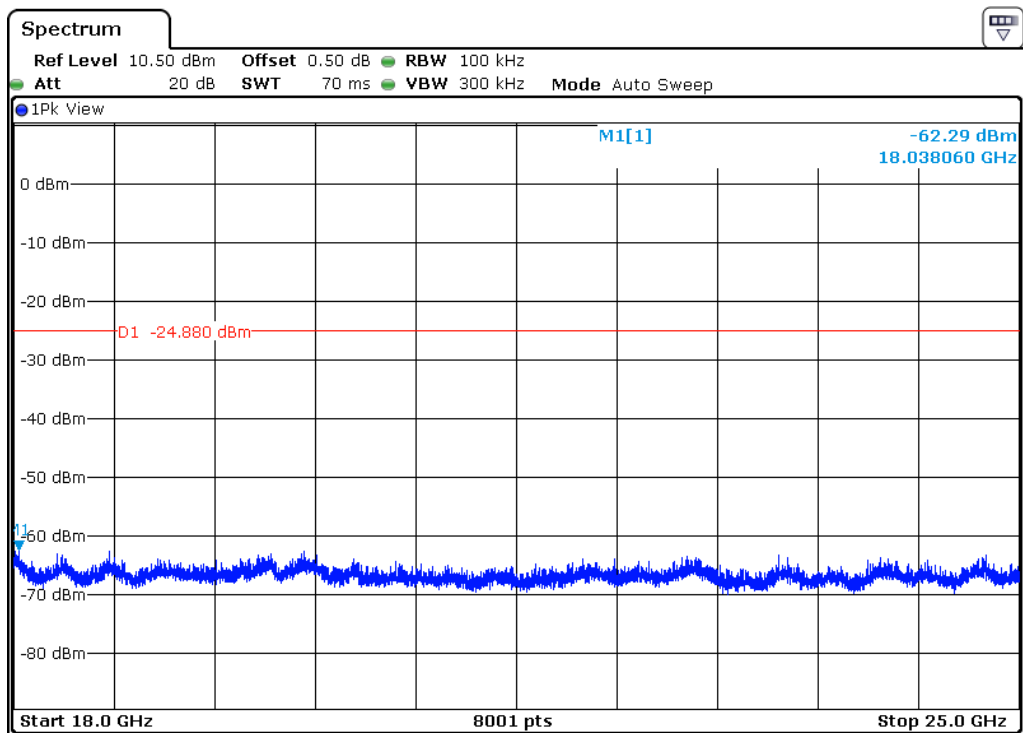
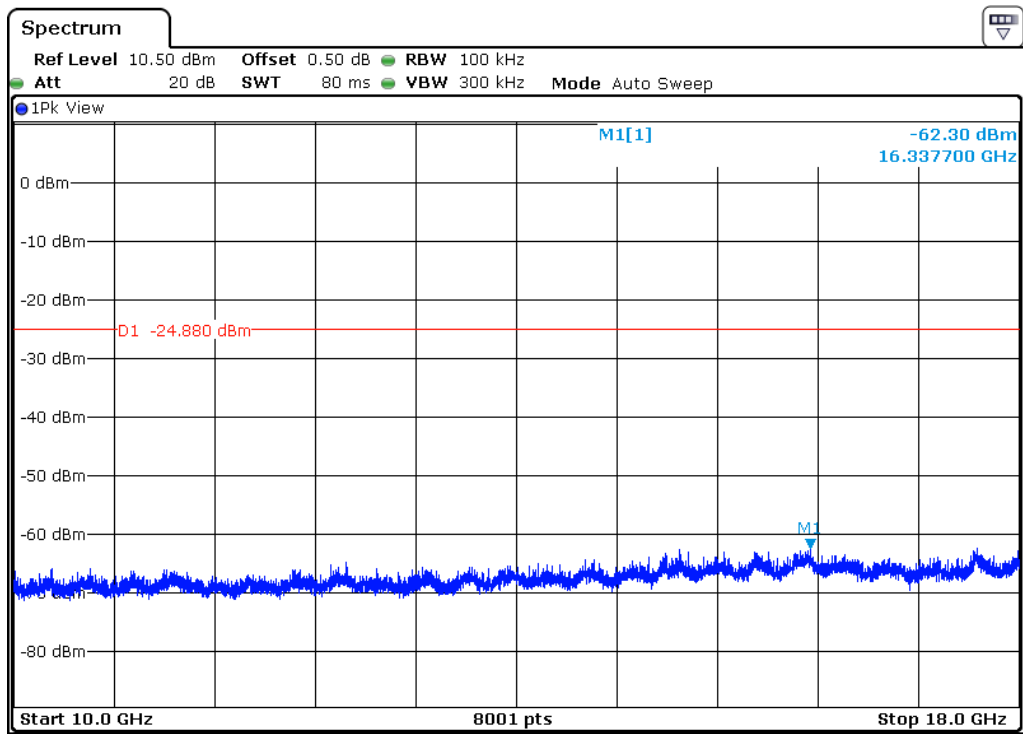


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Channel 19 (2440MHz) Reference Level: -4.88 dBm

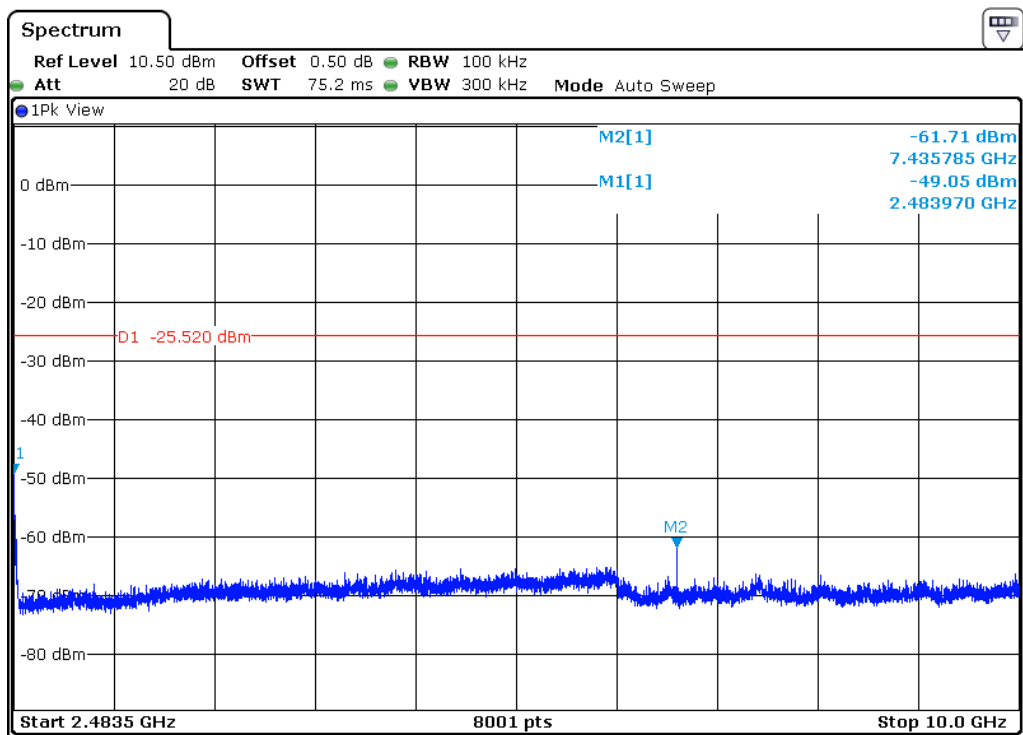
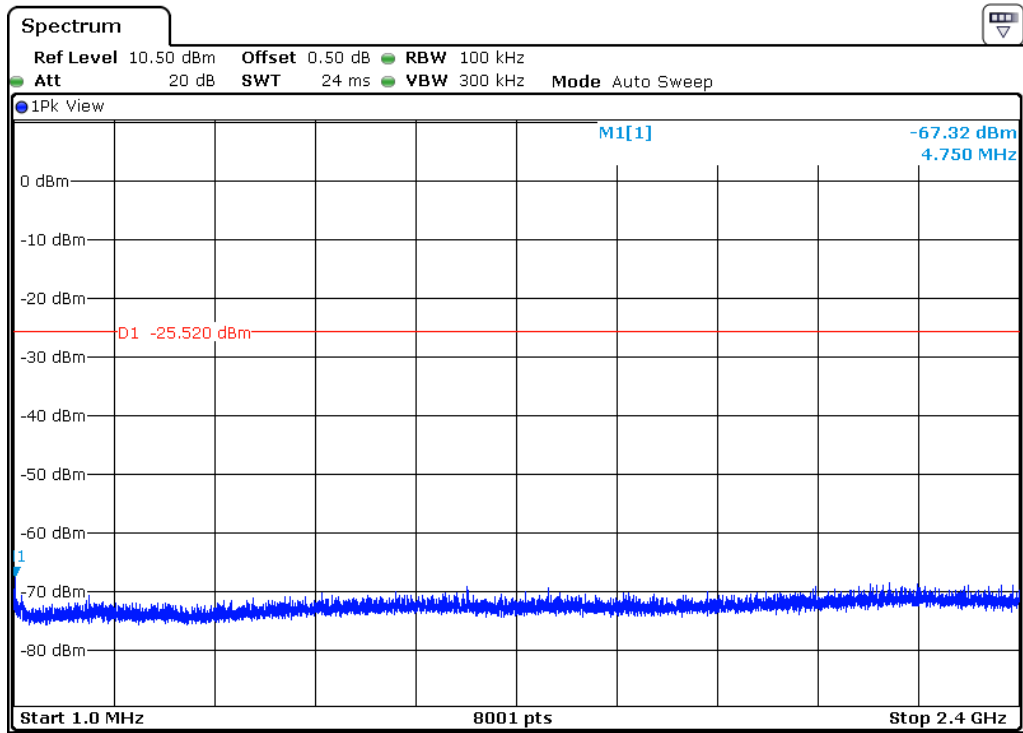


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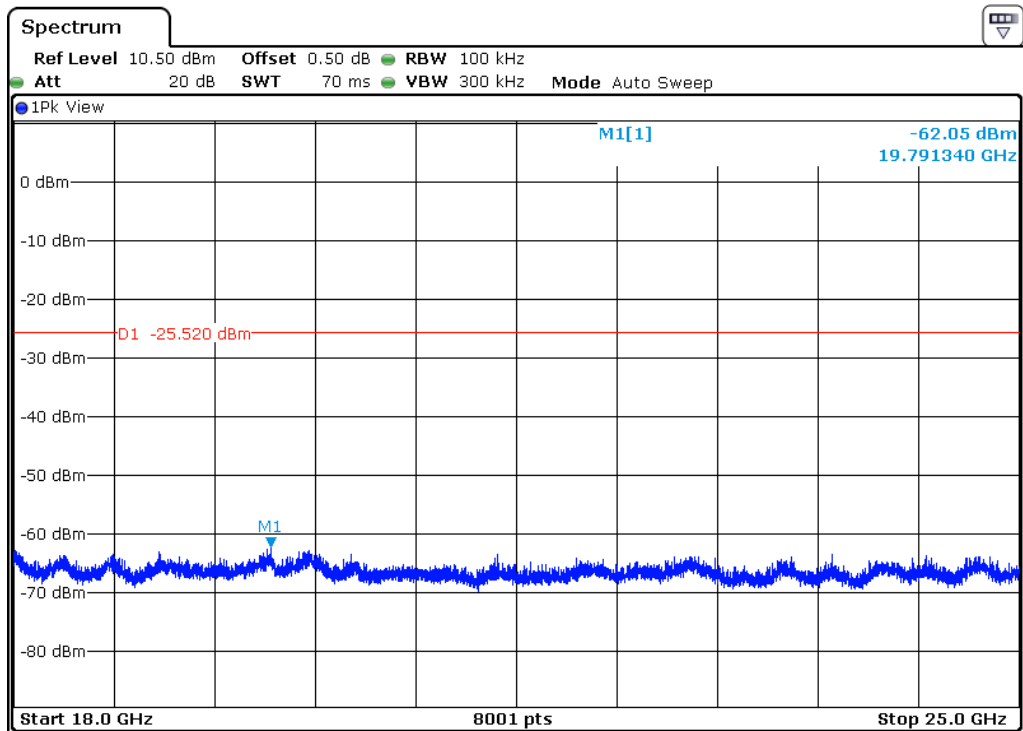
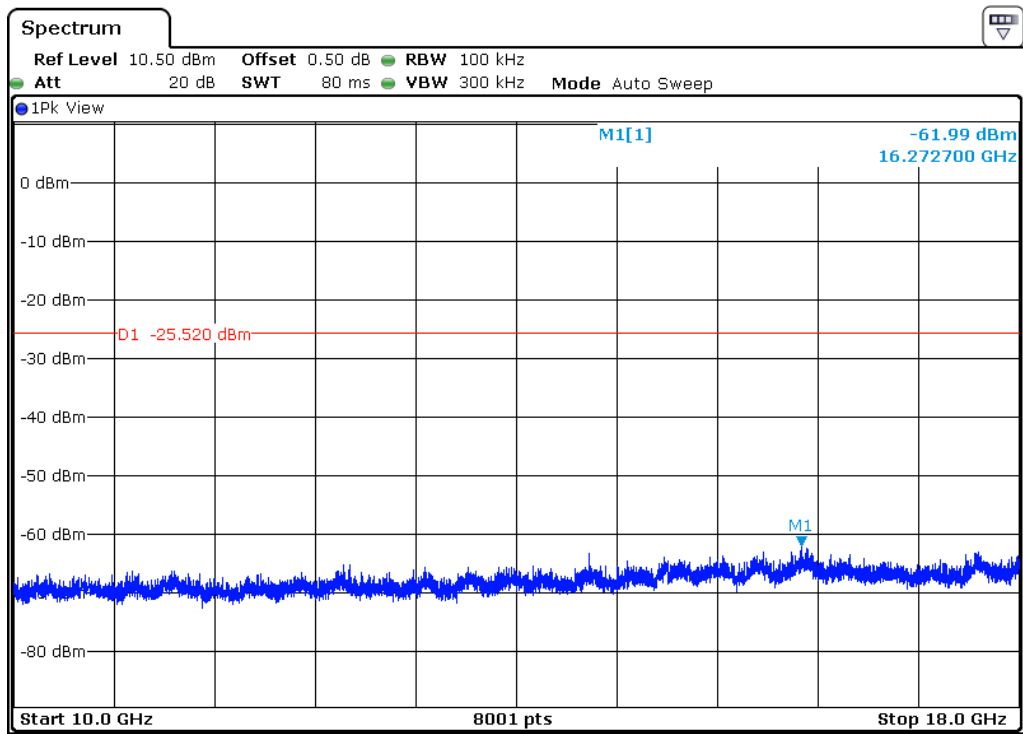


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Channel 39 (2480MHz) Reference Level: -5.52 dBm



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4.5 Out of Band Radiated Emissions (for emissions in 4.4 above that are less than 20dB below carrier), FCC Rule 15.247(d):

For out of band emissions that are close to or that exceed the 20dB attenuation requirement described in the specification, radiated measurements were performed at a 3m separation distance to determine whether these emissions complied with the general radiated emission requirement.

- ☒ Not required, since all emissions are more than 20dB below fundamental
- ☐ See attached data sheet

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Applicant: Microsoft Mobile Oy

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Model: DT-903 (HW:1.8, MW:2.0, WLC FW:V0049, BT FW:V1.0)

4.6 Transmitter Radiated Emissions in Restricted Bands, FCC Rule 15.35(b), (c):

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included. All measurements were performed with peak detection unless otherwise specified.

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

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Applicant: Microsoft Mobile Oy

Date of Test: July 8, 2014

Model: DT-903 (HW:1.8, MW:2.0, WLC FW:V0049, BT FW:V1.0)

4.7 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

$$FS = RA + AF + CF - AG + PD$$

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB
- PD = Pulse Desensitization in dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

$$FS = RA + AF + CF - AG + PD$$

Example

Assume a receiver reading of 62.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB. The net field strength for comparison to the appropriate emission limit is 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$RA = 62.0 \text{ dB}\mu\text{V}$$

$$AF = 7.4 \text{ dB}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$PD = 0 \text{ dB}$$

$$FS = 62 + 7.4 + 1.6 - 29 + 0 = 42 \text{ dB}\mu\text{V/m}$$

$$\text{Level in mV/m} = \text{Common Antilogarithm} [(42 \text{ dB}\mu\text{V/m})/20] = 125.9 \mu\text{V/m}$$

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4.8 Radiated Spurious Emission

The simultaneous transmission spurious was considered.

Worst Case Radiated Spurious Emission at 162.900MHz is passed by 8.7 dB margin.

For the electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.pdf.

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Applicant: Microsoft Mobile Oy

Date of Test: July 8, 2014

Model: DT-903 (HW:1.8, MW:2.0, WLC FW:V0049, BT FW:V1.0)

Worst Case Operating Mode: BT Link with wireless Charging

Table 1

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	167.290	45.0	20.0	5.6	30.6	43.5	-12.9
Horizontal	246.420	45.0	20.0	8.4	33.4	46.0	-12.6
Horizontal	297.720	40.9	20.0	11.7	32.6	46.0	-13.4
Vertical	162.900	36.5	20.0	18.3	34.8	43.5	-8.7
Vertical	249.720	37.2	20.0	15.7	32.9	46.0	-13.1
Vertical	412.680	45.8	20.0	5.4	31.2	46.0	-14.8

- NOTES: 1. Quasi-Peak detector is used except for others stated.
2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. All emissions are below the QP limit.

Test Engineer: Leo Lai

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Applicant: Microsoft Mobile Oy

Date of Test: July 8, 2014

Model: DT-903 (HW:1.8, MW:2.0, WLC FW:V0049, BT FW:V1.0)

Mode: BT transmitting with wireless charging

Table 2 (2402MHz)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Vertical	*2390.000	73.6	36.5	28.1	65.2	74.0	-8.8
Vertical	*4804.000	56.9	36.1	33.1	53.9	74.0	-20.1

Polarization	Frequency (MHz)	Reading Average (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Vertical	*2390.000	53.5	36.5	28.1	45.1	54.0	-8.9
Vertical	*4804.000	44.3	36.1	33.1	41.3	54.0	-12.7

- Notes:
1. Peak detector Data unless otherwise stated. Above 1000 MHz, RBW=1MHz, VBW=3MHz is used for Peak measurement, RBW=1MHz, VBW=10Hz is used for Average value.
 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Test Engineer: Leo Lai

TRF No.: FCC 15C_TX_b
FCC ID: PYADT-903

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Applicant: Microsoft Mobile Oy

Date of Test: July 8, 2014

Model: DT-903 (HW:1.8, MW:2.0, WLC FW:V0049, BT FW:V1.0)

Mode: BT transmitting with wireless charging

Table 3(2440MHz)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Vertical	*4880.000	56.2	36.1	33.3	53.4	74.0	-20.6
Vertical	*7320.000	50.2	36.2	37.9	51.9	74.0	-22.1

Polarization	Frequency (MHz)	Reading Average (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Vertical	*4880.000	45.2	36.1	33.3	42.4	54.0	-11.6
Vertical	*7320.000	41.1	36.2	37.9	42.8	54.0	-11.2

Notes: 1. Peak detector Data unless otherwise stated. Above 1000 MHz, RBW=1MHz, VBW=3MHz is used for Peak measurement, RBW=1MHz, VBW=10Hz is used for Average value.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Test Engineer: Leo Lai

INTERTEK TESTING SERVICES

Applicant: Microsoft Mobile Oy

Date of Test: July 8, 2014

Model: DT-903 (HW:1.8, MW:2.0, WLC FW:V0049, BT FW:V1.0)

Mode: BT transmitting with wireless charging

Table 4(2480MHz)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Vertical	*2483.500	63.5	36.7	28.6	55.4	74.0	-18.6
Vertical	*4960.000	56.3	36.1	33.4	53.6	74.0	-20.4
Vertical	*7440.000	51.1	36.2	38.2	53.1	74.0	-20.9

Polarization	Frequency (MHz)	Reading Average (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Vertical	*2483.500	50.0	36.7	28.6	41.9	54.0	-12.1
Vertical	*4960.000	44.8	36.1	33.4	42.1	54.0	-11.9
Vertical	*7440.000	40.4	36.2	38.2	42.4	54.0	-11.6

- Notes: 1. Peak detector Data unless otherwise stated. Above 1000 MHz, RBW=1MHz, VBW=3MHz is used for Peak measurement, RBW=1MHz, VBW=10Hz is used for Average value.
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Test Engineer: Leo Lai

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4.9 Conducted Emission

Worst Case Conducted emission at 0.734MHz is Passed by 13.8 dB margin

For electronic filing, the worst case conducted emission configuration photograph is saved with filename: conducted photos.pdf.

INTERTEK TESTING SERVICES

Applicant: Microsoft Mobile Oy

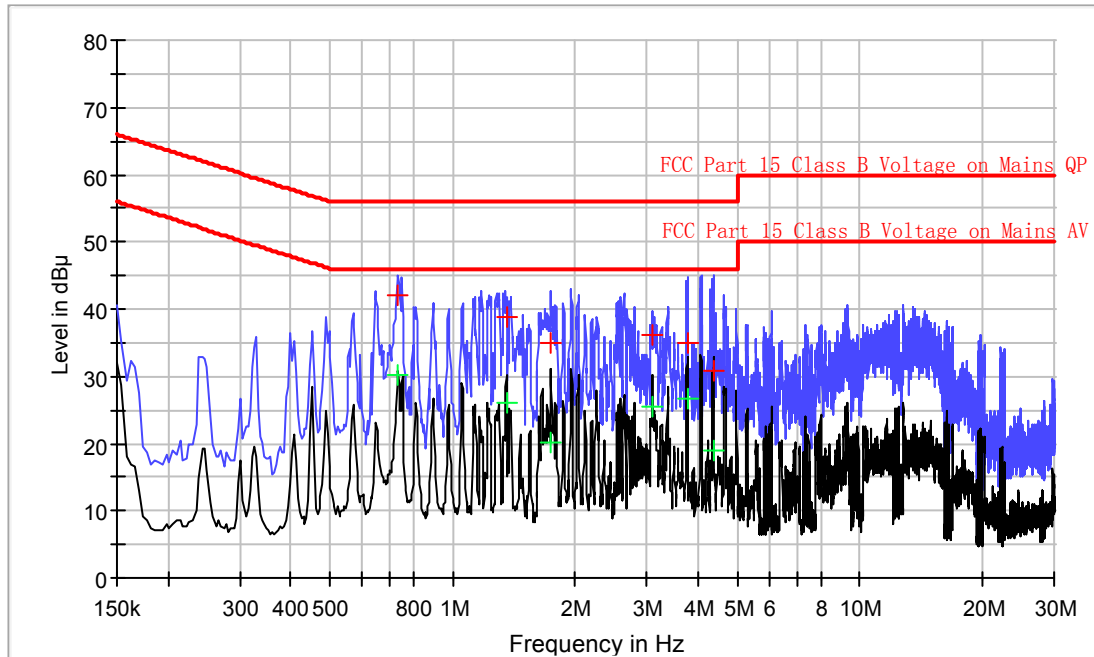
Date of Test: July 8, 2014

Model: DT-903 (HW:1.8, MW:2.0, WLC FW:V0049, BT FW:V1.0)

Worst Case Operating Mode: BT Link

Conducted Emission Test – FCC

Pursuant to 15.207 Emissions Requirement



Result Table QP

Frequency (MHz)	QuasiPeak (dBuV)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.734000	42.2	L1	9.5	13.8	56.0
1.354000	38.9	L1	9.8	17.1	56.0
1.746000	35.1	L1	9.8	20.9	56.0
3.090000	36.1	L1	9.8	19.9	56.0
3.770000	35.1	L1	9.8	20.9	56.0
4.374000	30.7	L1	9.9	25.3	56.0

Result Table AV

Frequency (MHz)	Average (dBuV)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.734000	30.3	L1	9.5	15.7	46.0
1.354000	26.1	L1	9.8	19.9	46.0
1.746000	20.2	L1	9.8	25.8	46.0
3.090000	25.4	L1	9.8	20.6	46.0
3.770000	26.7	L1	9.8	19.3	46.0
4.374000	18.9	L1	9.9	27.1	46.0

INTERTEK TESTING SERVICES

Applicant: Microsoft Mobile Oy

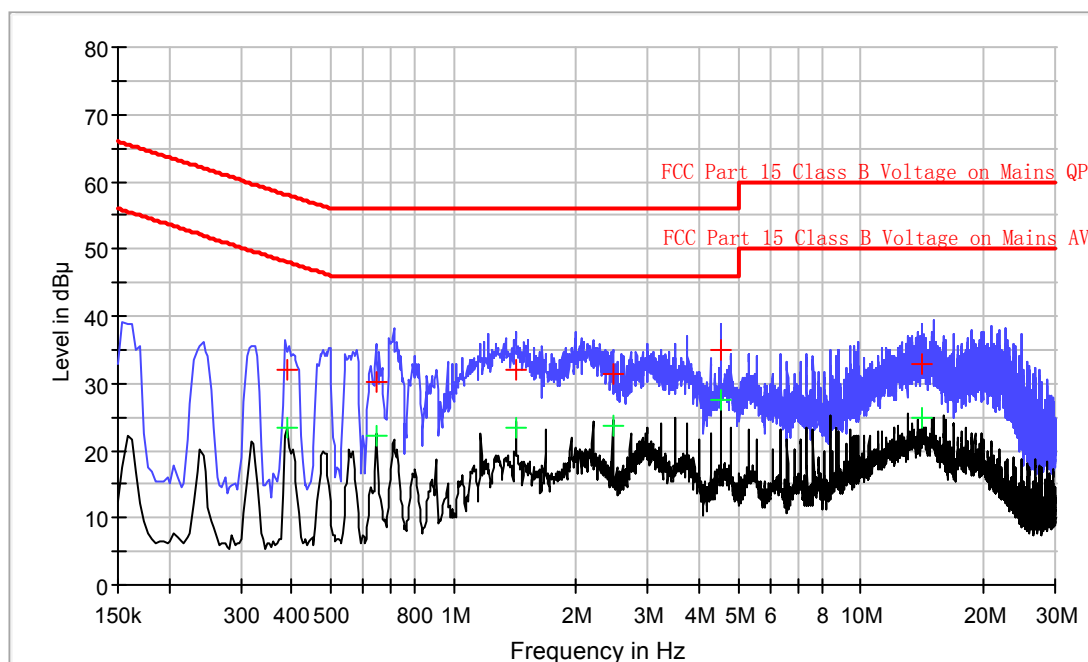
Date of Test: July 8, 2014

Model: DT-903 (HW:1.8, MW:2.0, WLC FW:V0049, BT FW:V1.0)

Worst Case Operating Mode: BT Link

Conducted Emission Test – FCC

Pursuant to 15.207 Emissions Requirement



Result Table QP

Frequency (MHz)	QuasiPeak (dBuV)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.390000	31.9	N	9.6	26.2	58.1
0.646000	30.2	N	9.4	25.8	56.0
1.426000	32.1	N	9.8	23.9	56.0
2.458000	31.5	N	9.8	24.5	56.0
4.530000	35.1	N	9.9	20.9	56.0
14.102000	32.9	N	10.3	27.1	60.0

Result Table AV

Frequency (MHz)	Average (dBuV)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.390000	23.5	N	9.6	24.6	48.1
0.646000	22.2	N	9.4	23.8	46.0
1.426000	23.4	N	9.8	22.6	46.0
2.458000	23.8	N	9.8	22.2	46.0
4.530000	27.6	N	9.9	18.4	46.0
14.102000	24.9	N	10.3	25.1	50.0

INTERTEK TESTING SERVICES

Applicant: Microsoft Mobile Oy

Date of Test: July 8, 2014

Model: DT-903 (HW:1.8, MW:2.0, WLC FW:V0049, BT FW:V1.0)

4.10 Radiated Emissions from Digital Section of Transceiver, FCC Ref: 15.109

☒ Not required - No digital part

☐ Test results are attached

☐ Included in the separated report.

EXHIBIT 5
EQUIPMENT PHOTOGRAPHS

5.0 **Equipment Photographs**

For electronic filing, the photographs of the tested EUT are saved with filename: external photos.pdf & internal photos.pdf.

INTERTEK TESTING SERVICES

EXHIBIT 6

PRODUCT LABELLING

INTERTEK TESTING SERVICES

6.0 **Product Labelling**

For electronic filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

INTERTEK TESTING SERVICES

EXHIBIT 7

TECHNICAL SPECIFICATIONS

INTERTEK TESTING SERVICES

7.0 Technical Specifications

For electronic filing, the block diagram and schematics of the tested EUT are saved with filename: block.pdf and circuit.pdf respectively.

INTERTEK TESTING SERVICES

EXHIBIT 8

INSTRUCTION MANUAL

INTERTEK TESTING SERVICES

8.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

INTERTEK TESTING SERVICES

EXHIBIT 9

MISCELLANEOUS INFORMATION

INTERTEK TESTING SERVICES

9.0 **Miscellaneous Information**

This miscellaneous information includes details of the measured bandedge, the test procedure and calculation of factor such as pulse desensitization.

INTERTEK TESTING SERVICES

9.1 Discussion of Pulse Desensitization

Pulse desensitivity is not applicable for this device. With a resolution bandwidth (3dB) of 1MHz, so the pulse desensitivity factor is 0dB.

INTERTEK TESTING SERVICES

9.2 **Emissions Test Procedures**

The following is a description of the test procedure used by Intertek Testing Services in the measurements of transmitters operating under Part 15, Subpart C rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4: 2009.

The transmitting equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjusted through all three orthogonal axes to obtain maximum emission levels. The antenna height and polarization are varied during the testing to search for maximum signal levels.

Detector function for radiated emissions is in peak mode. Average readings, when required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings.

The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower. For line conducted emissions, the range scanned is 150 kHz to 30 MHz.

INTERTEK TESTING SERVICES

9.2 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully charged battery is used.

Conducted measurements are made as described in ANSI C63.4: 2009.

The IF bandwidth used for measurement of radiated signal strength was 10 kHz for emission below 30 MHz and 120 kHz for emission from 30 MHz to 1000 MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. Above 1000 MHz, a resolution bandwidth of 1 MHz is used.

Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the restricted bands and above 1 GHz, signals are acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling, but those measurements taken at a closer distance are so marked.

INTERTEK TESTING SERVICES

EXHIBIT 10

TEST EQUIPMENT LIST

INTERTEK TESTING SERVICES

10.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-03	BiConiLog Antenna	ETS	3142C	00066460	28-Jun-14	28-Jun-15
SZ185-01	EMI Receiver	R&S	ESCI	100547	10-Mar-14	10-Mar-15
SZ061-08	Horn Antenna	ETS	3115	00092346	26-Oct-13	26-Oct-14
EM031-03	EXA Spectrum Analyzer	R&S	FSV40	101506	09-Jun-14	09-Jun-15
SZ182-02	RF Power Meter	Anritsu	ML2496A	1302005	21-May-14	21-May-15
SZ182-02-01	Pulse Power Sensor	Anritsu	MA2411B	1207429	21-May-14	21-May-15
SZ061-06	Active Loop Antenna	Electro-Metrics	EM-6876	217	29-Apr-14	29-Apr-15
SZ181-04	Preamplifier	Agilent	8449B	3008A02474	10-Mar-14	10-Mar-15
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	19-Apr-14	19-Apr-15
SZ062-06	RF Cable	RADIALL	0.04-26.5GHz	083388	1-Nov-13	1-Nov-14
SZ062-22	RF Cable	HUBER+SUHNER	SF104PE	MY1913/4PE	11-Nov-13	11-Nov-14
SZ062-23	RF Cable	HUBER+SUHNER	SF104PE	MY4262/4PE	11-Nov-13	11-Nov-14
SZ062-26	RF Cable	HUBER+SUHNER	SF104PE	MY4556/4PE	14-Jan-14	14-Jan-15
SZ067-04	Notch Filter	Micro-Tronics	BRM5070 2-02	--	21-May-14	21-May-15
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	9-Nov-13	9-Nov-14
SZ187-01	Two-Line V-Network	R&S	ENV216	100072	9-Nov-13	9-Nov-14
SZ187-02	Two-Line V-Network	R&S	ENV216	100073	16-Jun-14	16-Jun-15
SZ188-03	Shielding Room	ETS	RFD-100	4100	23-Aug-13	23-Aug-14
SZ065-03	Bluetooth Tester	R&S	CBT32	--	10-Mar-14	10-Mar-15

INTERTEK TESTING SERVICES

11.0 Annex

Document History

Report No.	Issue Date	Change
140701012SZN-003	September 12, 2014	Original