TEST REPORT

Report No.: 15100448HKG-002R1

Federation Enterprises (WA) Pty Ltd

Application
For
Certification
(Original Grant)
(FCC ID: 2AGSV-0201)
(IC: 20920-0201)

Transceiver

This report supersedes previous report with report number 15100448HKG-002 dated February 02, 2016

Prepared and Checked by:

Signed On File
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Approved by:

Digitally signed by Kenneth Wong
Location: Intertek Testing Services Hong Kong Ltd.

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Date: May 23, 2017

GENERAL INFORMATION

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Manufacturer:	N/A
Manufacturer Address:	N/A
Brand Name:	CYCLIQ
FCC Model/HVIN:	FLY12
Type of EUT:	Transceiver
Description of EUT:	Bicycle Light and Camera
Serial Number:	N/A
FCC ID / IC:	2AGSV-0201 / 20920-0201
Date of Sample Submitted:	October 14, 2015
Date of Test:	October 14, 2015 to February 02, 2016
Report No.:	15100448HKG-002R1
Report Date:	May 23, 2017
Environmental Conditions:	Temperature: +10 to 40°C Humidity: 10 to 90%

SUMMARY OF TEST RESULT

TEST SPECIFICATION	REFERENCE	RESULTS
Transmitter Power Line Conducted Emissions	15.207 / RSS-Gen 8.8	Pass
Radiated Emission Radiated Emission on the Bandedge	15.249, 15.209 / RSS-210 A2.9, RSS-210 2.5	Pass
Radiated Emission in Restricted Bands	15.205 / RSS-210 2.2	Pass

The equipment under test is found to be complying with the following standards:
FCC Part 15, October 1, 2015 Edition
RSS-210 Issue 8, December 2010
RSS-Gen Issue 4, November 2014

Note: 1. The EUT uses a permanently attached antenna which, in accordance to section 15.203, is considered sufficient to comply with the pervisions of this section.
2. Pursuant to FCC part 15 Section 15.215(c), the 20 dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over excepted variations in temperature and supply voltage were considered.

Table of Contents

1.0 General Description

1.1 Product Description

The Equipment-Under-Test (EUT) FLY12 is a Bicycle Light and Camera. The EUT contains a WIFI (b/g/n) and a Bluetooth 4.0 BLE modules. The video can be transferred via WIFI or micro USB port to Smartphone or PC. The Bluetooth connection is for the security between the EUT and the Smartphone. The EUT is powered by a 3.7V rechargeable battery which can be charged by the micro USB port. An iOS/Android apps installed in Smartphone can act as the remote control of the EUT. WIFI and BLE mode cannot be operated simultaneously.

For the WLAN (WiFi) module:
For 802.11b mode, it operates at frequency range of 2412.000MHz to 2462.000MHz with 11 channels. It transmits via direct-sequence spread spectrum (DSSS) modulation. Maximum bit rate can be up to 11Mbps. For 802.11g mode, it operates at frequency range of 2412.000MHz to 2462.000MHz with 11 channels. It transmits via Orthogonal Frequency Division Multiplexing (OFDM) modulation. Maximum bit rate can be up to 54Mbps. For 802.11n (HT20 with 20MHz bandwidth) mode, it operates at frequency range of 2412.000MHz to 2462.000MHz with 11 channels.

For Bluetooth 4.0 module:
For Bluetooth 4.0 BLE mode, it occupies a frequency range from 2402MHz to 2480MHz (40 channels with channel spacing of 2MHz). It transmits via GFSK modulation.

Antenna Type: Internal, Integral

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

1.2 Related Submittal(s) Grants

This is a single application for certification of a transceiver (Bluetooth portion).

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.10 (2013). All radiated measurements were performed in an 3m Chamber. Preliminary scans were performed in the 3m Chamber only to determine 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.

1.4 Test Facility

The 3m Chamber and conducted measurement facility used to collect the radiated data is located at Workshop No. 3, G/F., World-Wide Industrial Centre, 43-47 Shan Mei Street, Fo Tan, Sha Tin, N.T., Hong Kong. This test facility and site measurement data have been placed on file with the FCC and IC No. 2042V-1.

2.0 System Test Configuration

2.1 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 C63.10 (2013).

The device was powered by 3.7VDC rechargeable battery.

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 operated standalone and placed in the center of the turntable.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was mounted to a plastic stand if necessary and placed on the wooden turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

2.2 EUT Exercising Software

There was no special software to exercise the device. Once the unit is powered up, it transmits the RF signal continuously.

2.3 Special Accessories

There are no special accessories necessary for compliance of this product.

2.4 Measurement Uncertainty

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

2.5 Support Equipment List and Description

(1) 1 x USB cable of 58cm in length (Provided by Applicant)
(2) HP ProBook 430 G1 (Provided by Intertek)

3.0 Emission Results

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.

3.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any), Average Factor (optional) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF - AG - AV

where FS = Field Strength in dBµV/m
RA = Receiver Amplitude (including preamplifier) in dBµV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB
AV = Average Factor in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:

FS = RR + LF

where FS = Field Strength in dBµV/m
RR = RA - AG - AV in dBµV
LF = CF + AF in dB

Assume a receiver reading of 52.0 dBµV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB are added. The amplifier gain of 29 dB and average factor of 5 dB are subtracted, giving a field strength of 27 dBµV/m. This value in dBµV/m was converted to its corresponding level in µV/m.

RA = 52.0 dBµV/m
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
AV = 5.0 dB
RR = 18.0 dBµV
LF = 9.0 dB
FS = RR + LF
FS = 18 + 9 = 27 dBµV/m

Level in µV/m = Common Antilogarithm [(27 dBµV/m)/20] = 22.4 µV/m

3.2 Radiated Emission Configuration Photograph

The worst case in radiated emission was found at 14880.000 MHz

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

3.3 Radiated Emission Data

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgment: Passed 17.2 by dB

3.4 Conducted Emission Configuration Photograph

The worst case in line-conducted emission was found at 0.150 MHz

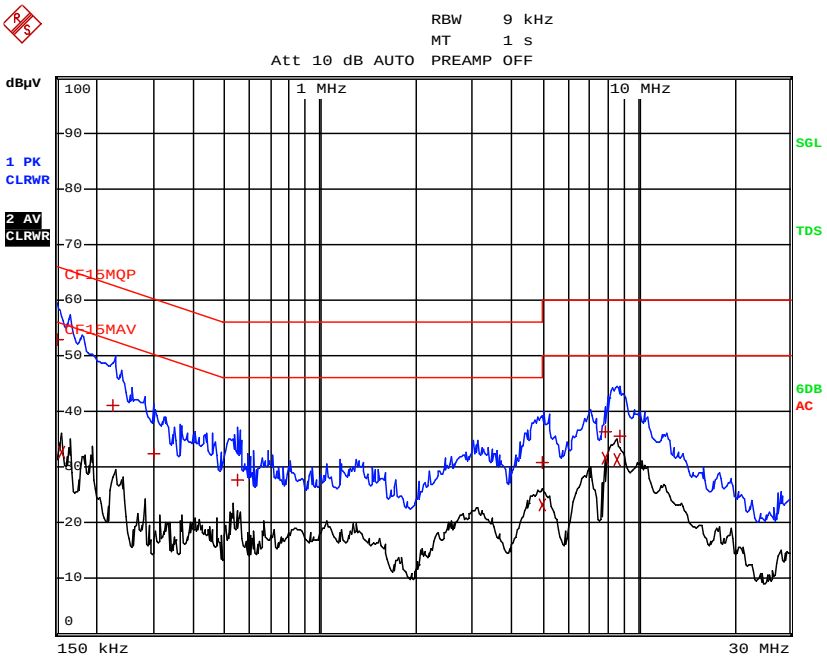
For electronic filing, the worst case line-conducted configuration photographs are saved with filename: conducted photo.pdf.

3.5 Conducted Emission Data

For electronic filing, the graph and data table of conducted emission is saved with filename: conducted.pdf.

Judgment: Pass by 13.21 dB

Worst-Case Operating Mode: Charging with Bluetooth



EDIT PEAK LIST (Final Measurement Results)

Trace1: CF15MQP
Trace2: CF15MAV
Trace3: ---

TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	150 kHz	52.78	N	-13.21
2	CISPR Average	154.5 kHz	32.64	N	-23.10
1	Quasi Peak	226.5 kHz	41.07	N	-21.50
1	Quasi Peak	298.5 kHz	32.43	L1	-27.84
1	Quasi Peak	546 kHz	27.75	L1	-28.25
1	Quasi Peak	4.992 MHz	30.76	L1	-25.23
2	CISPR Average	4.992 MHz	23.34	N	-22.65
1	Quasi Peak	7.971 MHz	36.39	L1	-23.60
2	CISPR Average	7.9755 MHz	31.72	L1	-18.27
2	CISPR Average	8.601 MHz	31.47	N	-18.52
1	Quasi Peak	8.7855 MHz	35.57	N	-24.42

Note: Measurement Uncertainty is ±4.2dB at a level of confidence of 95%.

Applicant: Federation Enterprises (WA) Pty Ltd Date of Test: December 04, 2015
Model: FLY12
Worst-Case Operating Mode: Bluetooth transmission with Charging

Table 1
Radiated Emissions
Pursuant to FCC Part 15 Section 15.249 / RSS-210 A2.9 Requirement

Lowest Channel

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Average Factor (dB)	Calculated at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	2402.000	95.3	33	29.4	91.7	50.5	41.2	94.0	-52.8
V	***4804.000***	***48.2***	***33***	***34.9***	***50.1***	***50.5***	***-0.4***	***54.0***	***-54.4***
V	7206.000	46.6	33	37.9	51.5	50.5	1.0	54.0	-53.0
V	9608.000	45.9	33	40.4	53.3	50.5	2.8	54.0	-51.2
V	***12010.000***	***48.1***	***33***	***40.5***	***55.6***	***50.5***	***5.1***	***54.0***	***-48.9***
V	14412.000	49.4	33	40.0	56.4	50.5	5.9	54.0	-48.1

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	2402.000	95.3	33	29.4	91.7	114.0	-22.3
V	***4804.000***	***48.2***	***33***	***34.9***	***50.1***	***74.0***	***-23.9***
V	7206.000	46.6	33	37.9	51.5	74.0	-22.5
V	9608.000	45.9	33	40.4	53.3	74.0	-20.7
V	***12010.000***	***48.1***	***33***	***40.5***	***55.6***	***74.0***	***-18.4***
V	14412.000	49.4	33	40.0	56.4	74.0	-17.6

NOTES: 1. Peak Detector Data unless otherwise 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 sign in the column shows value below limit.

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

5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 4.1.

6. Measurement Uncertainty is ±5.3dB at a level of confidence of 95%.

Applicant: Federation Enterprises (WA) Pty Ltd Date of Test: December 04, 2015
Model: FLY12
Worst-Case Operating Mode: Bluetooth transmission with Charging

Table 2
Radiated Emissions
Pursuant to FCC Part 15 Section 15.249 / RSS-210 A2.9 Requirement

Middle Channel

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Average Factor (dB)	Calculated at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	2440.000	95.6	33	29.4	92.0	50.5	41.5	94.0	-52.5
V	***4880.000***	***48.4***	***33***	***34.9***	***50.3***	***50.5***	***-0.2***	***54.0***	***-54.2***
V	***7320.000***	***46.4***	***33***	***37.9***	***51.3***	***50.5***	***0.8***	***54.0***	***-53.2***
V	9760.000	46.2	33	40.4	53.6	50.5	3.1	54.0	-50.9
V	***12200.000***	***47.7***	***33***	***40.5***	***55.2***	***50.5***	***4.7***	***54.0***	***-49.3***
V	14640.000	51.1	33	38.4	56.5	50.5	6.0	54.0	-48.0

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	2440.000	95.6	33	29.4	92.0	114.0	-22.0
V	***4880.000***	***48.4***	***33***	***34.9***	***50.3***	***74.0***	***-23.7***
V	***7320.000***	***46.4***	***33***	***37.9***	***51.3***	***74.0***	***-22.7***
V	9760.000	46.2	33	40.4	53.6	74.0	-20.4
V	***12200.000***	***47.7***	***33***	***40.5***	***55.2***	***74.0***	***-18.8***
V	14640.000	51.1	33	38.4	56.5	74.0	-17.5

NOTES: 1. Peak Detector Data unless otherwise 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 sign in the column shows value below limit.

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

5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC FCC Part 15 Section 15.205 / RSS-210 4.1.

6. Measurement Uncertainty is ±5.3dB at a level of confidence of 95%.

Applicant: Federation Enterprises (WA) Pty Ltd Date of Test: December 04, 2015
Model: FLY12
Worst-Case Operating Mode: Bluetooth transmission with Charging

Table 3
Radiated Emissions
Pursuant to FCC Part 15 Section 15.249 / RSS-210 A2.9 Requirement

Highest Channel

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Average Factor (dB)	Calculated at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	2480.000	95.4	33	29.4	91.8	50.5	41.3	94.0	-52.7
V	***4960.000***	***48.0***	***33***	***34.9***	***49.9***	***50.5***	***-0.6***	***54.0***	***-54.6***
V	***7440.000***	***46.7***	***33***	***37.9***	***51.6***	***50.5***	***1.1***	***54.0***	***-52.9***
V	9920.000	46.1	33	40.4	53.5	50.5	3.0	54.0	-51.0
V	***12400.000***	***47.8***	***33***	***40.5***	***55.3***	***50.5***	***4.8***	***54.0***	***-49.2***
V	14880.000	51.4	33	38.4	56.8	50.5	6.3	54.0	-47.7

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	2480.000	95.4	33	29.4	91.8	114.0	-22.2
V	***4960.000***	***48.0***	***33***	***34.9***	***49.9***	***74.0***	***-24.1***
V	***7440.000***	***46.7***	***33***	***37.9***	***51.6***	***74.0***	***-22.4***
V	9920.000	46.1	33	40.4	53.5	74.0	-20.5
V	***12400.000***	***47.8***	***33***	***40.5***	***55.3***	***74.0***	***-18.7***
V	14880.000	51.4	33	38.4	56.8	74.0	-17.2

NOTES: 1. Peak Detector Data unless otherwise 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 sign in the column shows value below limit.

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

5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 4.1.

6. Measurement Uncertainty is ±5.3dB at a level of confidence of 95%.

Applicant: Federation Enterprises (WA) Pty Ltd Date of Test: December 04, 2015
Model: FLY12
Worst-Case Operating Mode: Bluetooth transmission with Charging

Table 4
Radiated Emissions
Pursuant to Section 15.209 / RSS-210 2.5 Requirement

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
V	***270.364***	***36.6***	***16***	***22.0***	***42.6***	***46.0***	***-3.4***
V	***283.136***	***24.1***	***16***	***22.0***	***30.1***	***46.0***	***-15.9***
V	355.212	24.1	16	24.0	32.1	46.0	-13.9
V	383.136	32.5	16	24.0	40.5	46.0	-5.5
V	***405.860***	***24.9***	***16***	***24.0***	***32.9***	***46.0***	***-13.1***
V	528.584	21.1	16	27.0	32.1	46.0	-13.9

NOTES: 1. Peak Detector Data unless otherwise 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 sign in the column shows value below limit.

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

5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 2.5.

6. Measurement Uncertainty is ±5.3dB at a level of confidence of 95%.

4.0 Equipment Photographs

For electronic filing, the photographs are saved with filename: external photos.pdf and internal photos.pdf.

5.0 Product Labelling

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

6.0 Technical Specifications

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

7.0 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 and Canada.

8.0 Miscellaneous Information

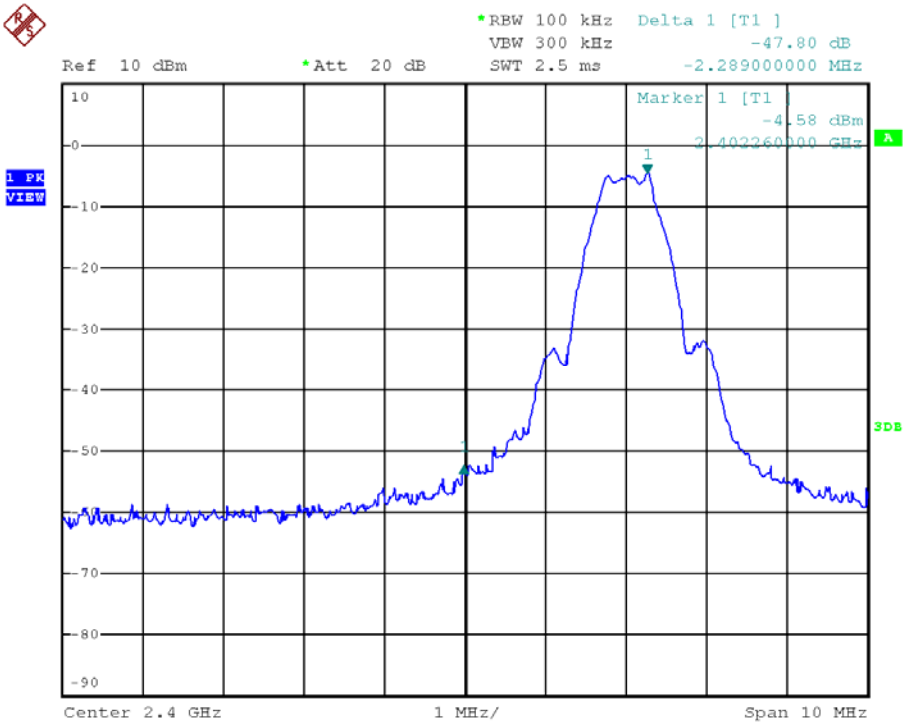
The miscellaneous information includes details of the test procedure and measured bandwidth / calculation of factor such as pulse desensitization and averaging factor (calculation and timing diagram).

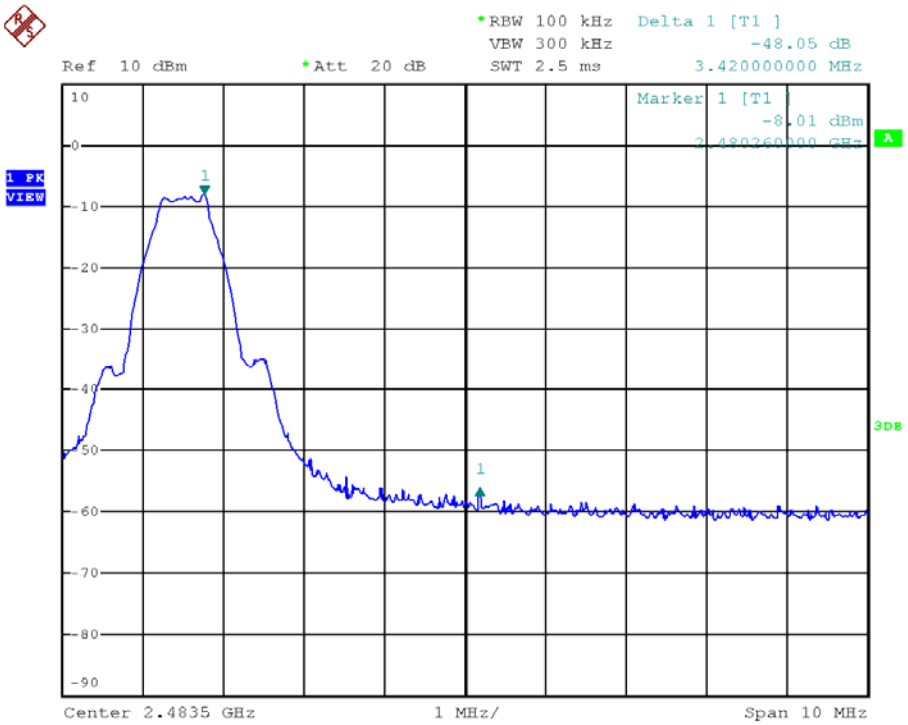
8.1 Radiated Emission on the Bandedge

From the following plots, they show that the fundamental emissions are confined in the specified band (2400MHz to 2483.5MHz). In case of the fundamental emissions are within two standard bandwidths from the bandedge, the delta measurement technique is used for determining bandedge compliance. Standard bandwidth is the bandwidth specified by ANSI C63.10 (2013) for frequency being measured.

Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50dB below the level of the fundamental or to the general radiated emissions limits in Section 15.209 / RSS-210 4.4, whichever is the lesser attenuation, which meet the requirement of part 15.249(d) / RSS-210 B.10.

Peak Measurement (Bluetooth 4.0 BLE)





Peak Measurement (Bluetooth 4.0 BLE)

Bandedge compliance is determined by applying marker-delta method, i.e. (Bandedge Plot).

Lower bandedge

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

=91.7 dBµV/m - 47.8 dB
=43.9 dBµV/m

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

=41.2 dBµV/m - 47.8 dB
=-6.6 dBµV/m

Upper bandedge

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

=91.8 dBµV/m - 48.1 dB
=43.7 dBµV/m

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

=41.3 dBµV/m - 48.1 dB
=-6.8 dBµV/m

The resultant field strength meets the general radiated emission limit in Section 15.209 / RSS-210 2.5, which does not exceed 74 dBµV/m (Peak Limit) and 54 dBµV/m (Average Limit).

8.2 Discussion of Pulse Desensitization

Pulse desensitivity is not applicable for this device. The effective period (Teff) is approximately 0.3 ms for a digital "1" bit which illustrated on technical specification, with a resolution bandwidth (3dB) of 1MHz, so the pulse desensitivity factor is 0dB.

8.3 Calculation of Average Factor

(Bluetooth 4.0 BLE)
The duty cycle is simply the on-time divided by the period:

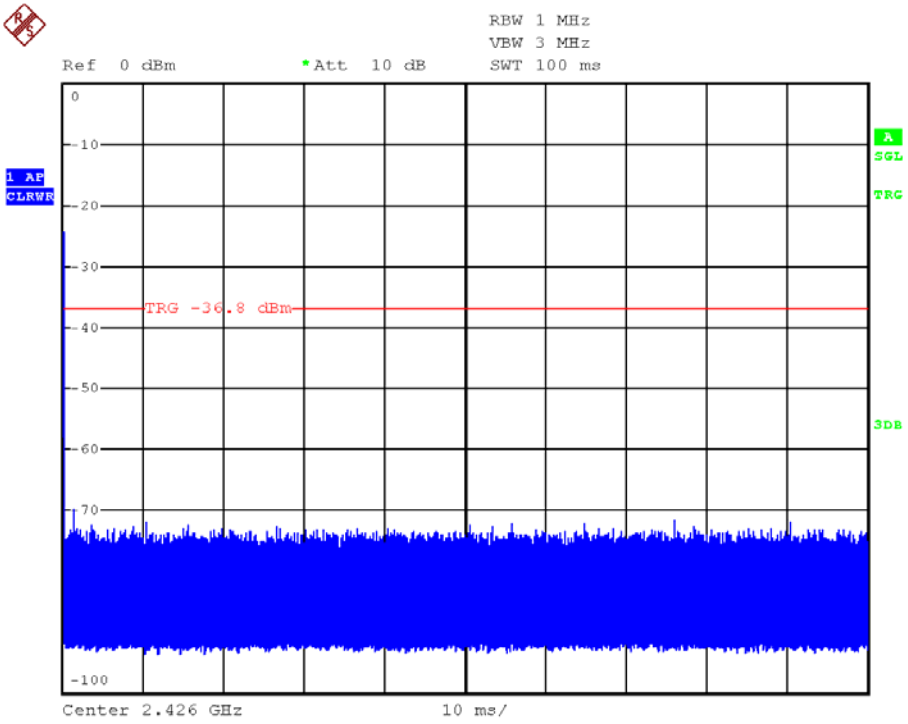
The duration of one cycle = 100ms

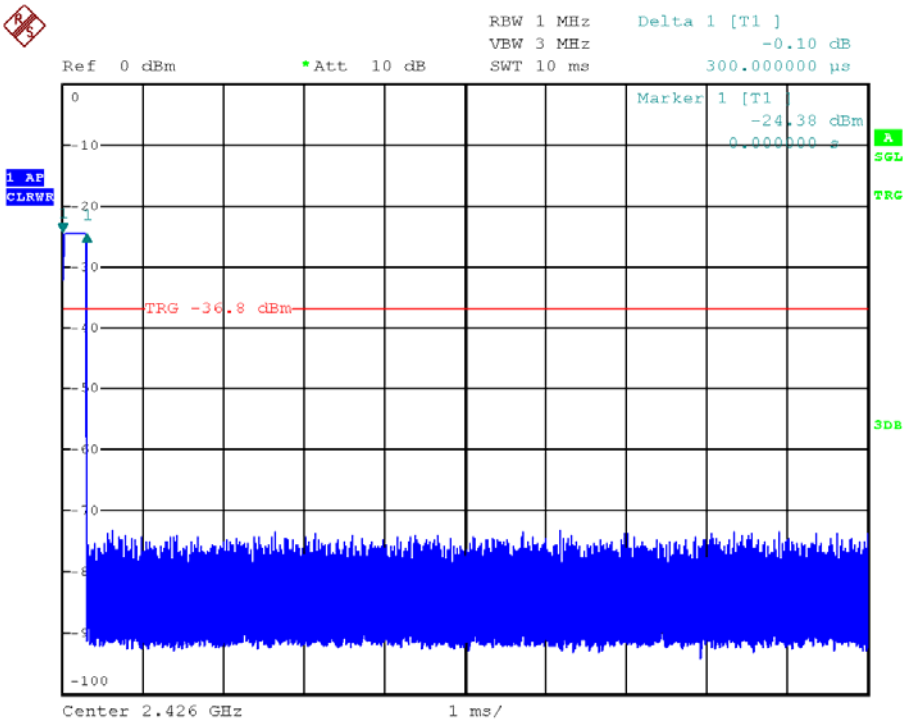
Effective period of the cycle = (0.20)x1 = 0.30ms

DC = 0.20 / 100 = 0.003

Therefore, the averaging factor is found by 20log 0.003 = -50.5dB.

Average Factor (Bluetooth 4.0 BLE)





8.4 Emissions Test Procedures

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

The transmitting equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately 0.8m in height above the ground plane for emission measurement at or below 1GHz and 1.5m in height above the ground plane for emission measurement above 1GHz. 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 axis to obtain maximum emission levels. The antenna height and polarization are also varied during the testing to search for maximum signal levels. The height of the antenna is varied from one to four meters.

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. A detailed description for the calculation of the average factor can be found in Exhibit 8.3.

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.

8.4 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.

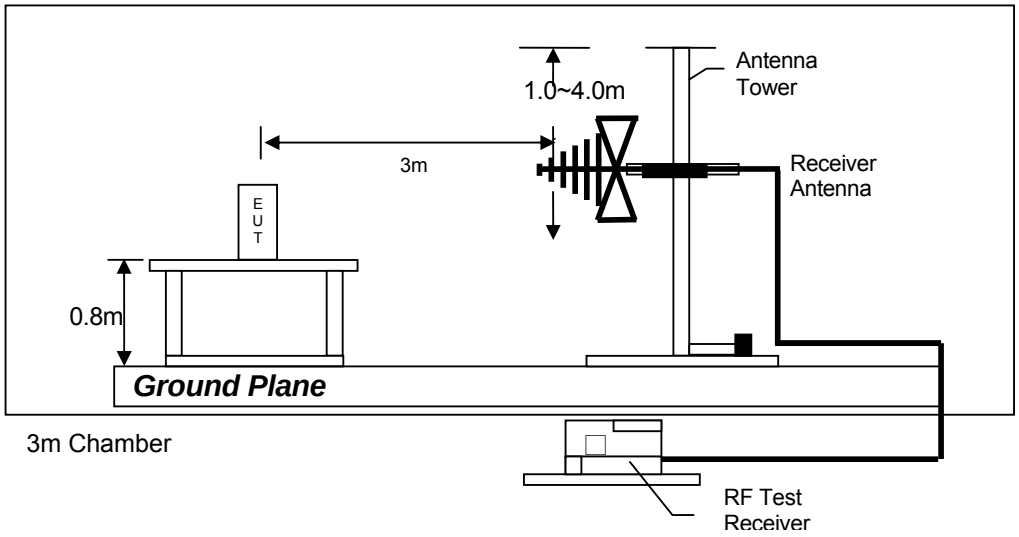
Conducted measurements were made as described in ANSI C63.10 (2013).

The IF bandwidth used for measurement of radiated signal strength was 100 kHz or greater when frequency is below 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. A discussion of whether pulse desensitivity is applicable to this unit is included in this report (See Exhibit 8.1). Above 1000 MHz, a resolution bandwidth of 3 MHz is used.

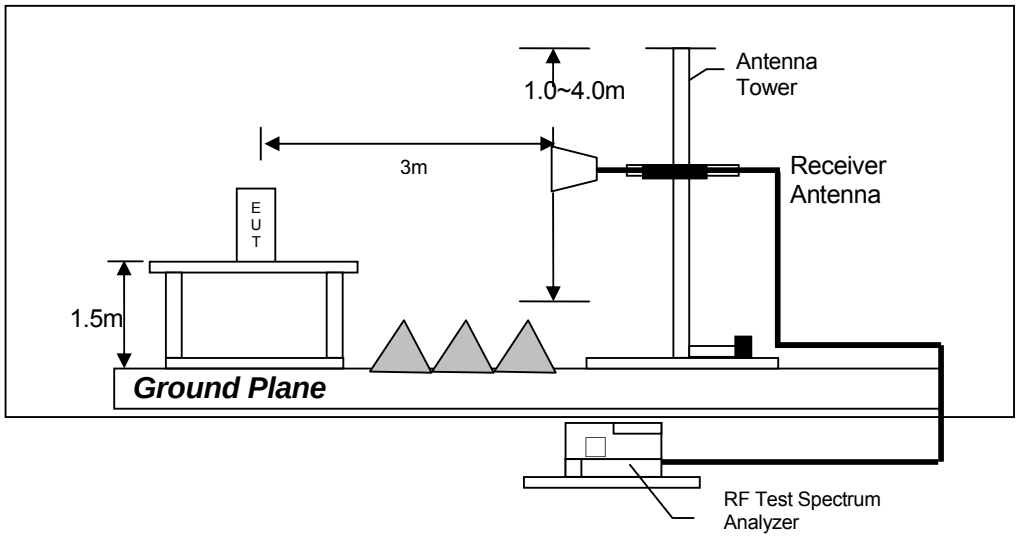
Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the forbidden bands and above 1 GHz, signals are acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling,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

8.4.1 Radiated Emission Test Setup

The figure below shows the test setup, which is utilized to make these measurements.



Test setup of radiated emissions up to 1GHz



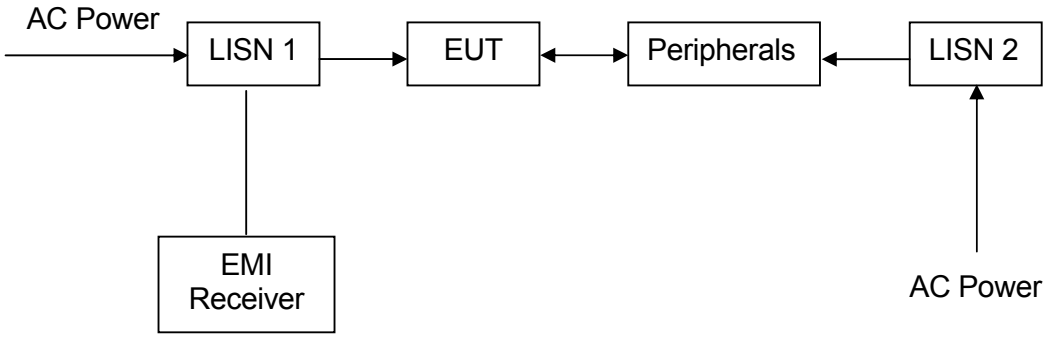
Test setup of radiated emissions above 1GHz

8.4.2 Conducted Emission Test Procedures

For tabletop equipment, the EUT along with its peripherals were placed on a 1.0m(W)×1.5m(L) and 0.8m in height wooden table. For floor-standing equipment, the EUT and all cables were insulated, if required, from the ground plane by up to 12 mm of insulating material. The EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane. The EUT was connected to power mains through a line impedance stabilization network (LISN), which provided 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room. The excess power cable between the EUT and the LISN was bundled.

All connecting cables of EUT and peripherals were moved to find the maximum emission.

8.4.3 Conducted Emission Test Setup

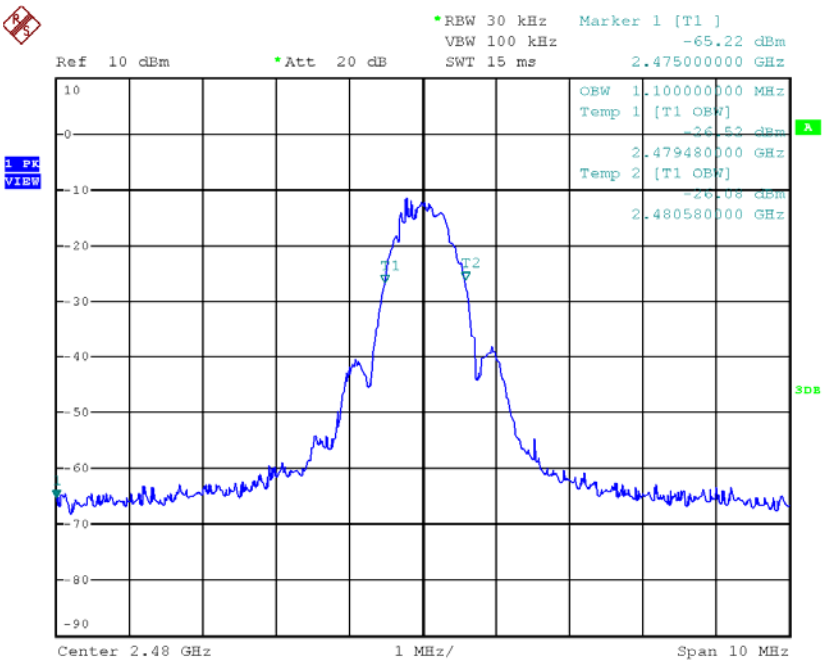


8.5 Occupied Bandwidth

Occupied Bandwidth Results: (Bluetooth 4.0 BLE)

Bluetooth	Occupied Bandwidth (MHz)
Low Channel: 2402	1.1
Middle Channel: 2440	1.1
High Channel: 2480	1.1

The worst case is shown as below



9.0 Confidentiality Request

For electronic filing, a preliminary copy of the confidentiality request is saved with filename: request.pdf.

10.0 Equipment List

1) Radiated Emissions Test

Equipment	EMI Test Receiver	Spectrum Analyzer
Registration No.	EW-3095	EW-2253
Manufacturer	R&S	R&S
Model No.	ESCI	FSP40
Calibration Date	Nov. 05, 2015	May 27, 2015
Calibration Due Date	Nov. 05, 2016	May 27, 2016

Equipment	BiConiLog Antenna	Double Ridged Guide Antenna
Registration No.	EW-3061	EW-0194
Manufacturer	EMCO	EMCO
Model No.	3412E	3115
Calibration Date	Jul. 22, 2015	Jan. 29, 2015
Calibration Due Date	Jul. 22, 2016	Jul. 29, 2016

2) Conducted Emissions Test

Equipment	EMI Test Receiver	LISN
Registration No.	EW-2666	EW-2501
Manufacturer	R&S	R&S
Model No.	ESCI7	ENV-216
Calibration Date	May 13, 2015	Jan. 15, 2015
Calibration Due Date	May 13, 2016	Jan. 15, 2016

3) Bandedge and Average Factor Measurement

Equipment	Spectrum Analyzer
Registration No.	EW-2329
Manufacturer	R&S
Model No.	FSP3
Calibration Date	Jun. 17, 2015
Calibration Due Date	Jun. 17, 2016

END OF TEST REPORT