TEST REPORT

Report No.: 14010177HKG-005R1

Satarii Inc

Application
For
Certification
(Original Grant)
(FCC ID: AMX-2782BA)

Transceiver

This report supersedes previous report with report number 14010177HKG-005 dated March 19, 2014

Prepared and Checked by:

Signed On File
Allen Wong
Assistant Engineer

Approved by:

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

Wong Kwok Yeung, Kenneth
Lead Engineer
Date: March 26, 2014

GENERAL INFORMATION

Satarii Inc
BRAND NAME: Swivl, MODEL: SW2782(BA)

FCC ID: AMX-2782BA

Grantee:	Satarii Inc
Grantee Address:	1354 El Camino Real, San Carlos, California 94070, United States.
Contact Person:	Vladimir Tetelbaum
Tel:	1 (650) 264-4994
Fax:	1 (650) 362-1992
e-mail:	vlad@satarii.com
Manufacturer:	Satarii Inc
Manufacturer Address:	1354 El Camino Real, San Carlos, California 94070, United States.
Brand Name:	Swivl
Model:	SW2782(BA)
Type of EUT:	Transceiver
Description of EUT:	Swivl Base
Serial Number:	N/A
FCC ID	AMX-2782BA
Date of Sample Submitted:	January 06, 2014
Date of Test:	January 06, 2014 to January 30, 2014
Report No.:	14010177HKG-005R1
Report Date:	March 26, 2014
Environmental Conditions:	Temperature: +10 to 40°C Humidity: 10 to 90%

SUMMARY OF TEST RESULT

Satarii Inc
BRAND NAME: Swivl, MODEL: SW2782(BA)

FCC ID: AMX-2782BA

TEST SPECIFICATION	REFERENCE	RESULTS
Transmitter Power Line Conducted Emissions	15.207	Pass
Bandwidth Requirement Radiated Emission Radiated Emission on the Bandedge	15.249 / 15.209	Pass

The equipment under test is found to be complying with the following standards:
FCC Part 15, October 1, 2012 Edition

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) is the base portion of the 2.4GHz remote control system. The EUT contains a USB, a micro-USB, a shutter port, an audio interface, a Bluetooth module and a Purepath Wireless transceiver. The Bluetooth module in the EUT complies with Bluetooth version 3.0 standards with operating frequency range from 2402MHz to 2480MHz (79 channels with 1MHz channel spacing). The Purepath Wireless transceiver in the EUT is operating in the frequency range from 2406MHz to 2474MHz (18 channels with 4MHz channel spacing). The EUT can be powered by AC/DC adaptor (Input: 100-240VAC 50/60Hz; Output: 5.25VDC 2.5A) and 1 X 3.7V rechargeable battery (Li-Poly).

The EUT can accept audio and control signal via Purepath Wireless once paired with the Marker. After paired with an Apple Device via Bluetooth, the control signal can be transferred to it to start recording audio signal from the audio interface and video from its camera. The EUT is using non-adaptive frequency hopping in the Bluetooth module as declared by the applicant. USB port interface of the EUT do not contain PC Connectivity which the USB interface is for charging the Apple device use only. The micro-USB port is disabled and not for End-user use, it is only used for firmware upgrades by manufacturer. A shutter port is also disabled for this device.

For Bluetooth portion, the certification procedure of modular approval of the Bluetooth module (with FCC ID: A8TBM57SPPSYC2A) has been authorized by certification procedure. Thus, “Contains FCC ID: A8TBM57SPPSYC2A” can be found on the product label.

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.

The Certification procedure of transceiver (Swivl Marker) (with FCC ID: AMX-2782MA) for this transceiver (Swivl Base) (with FCC ID: AMX-2782BA) is being processed as the same time of this application.

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2009). All radiated measurements were performed in an Open Area Test Site. Preliminary scans were performed in the Open Area Test Site 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 open area test site and conducted measurement facility used to collect the radiated data is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been placed on file with the FCC.

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 C63.4 (2009).

The device was powered by 120V AC/DC adaptor (Input: 100-240VAC 50/60Hz; Output: 5.25VDC 2.5A) and/or 1 x 3.7V Lithium rechargeable battery pack.

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 rear of unit shall be flushed with the rear of the table.

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.

For simultaneous transmission, both purepath module and Bluetooth module are also switched on when taking radiated emission for determining worst-case spurious emission.

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 Equipment Modification

Any modifications installed previous to testing by Satarii Inc will be incorporated in each production model sold/leased in the United States and Canada.

No modifications were installed by Intertek Testing Services Hong Kong Ltd.

2.5 Measurement Uncertainty

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

2.6 Support Equipment List and Description

1. 1 x 0.1m long audio cable	Provided by Applicant
2. Apple iPod touch	Provided by Applicant
3. 1 x 0.5m long iPod charging cable	Provided by Applicant
4. AC/DC adaptor (Model: S018KM0530250; Input: 100-240VAC 50/60Hz; Output: 5.25VDC 2.5A)	Provided by Applicant

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
FS = RR + LF
FS = 18 + 9 = 27 dBµV/m

RR = 18.0 dBµV
LF = 9.0 dB

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 158.957 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 by 3.9 dB

3.4 Conducted Emission Configuration Photograph

The worst case in line-conducted emission was found at 0.191 MHz

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

3.5 Conducted Emission Data

The graph data of conducted emission is shown as below;

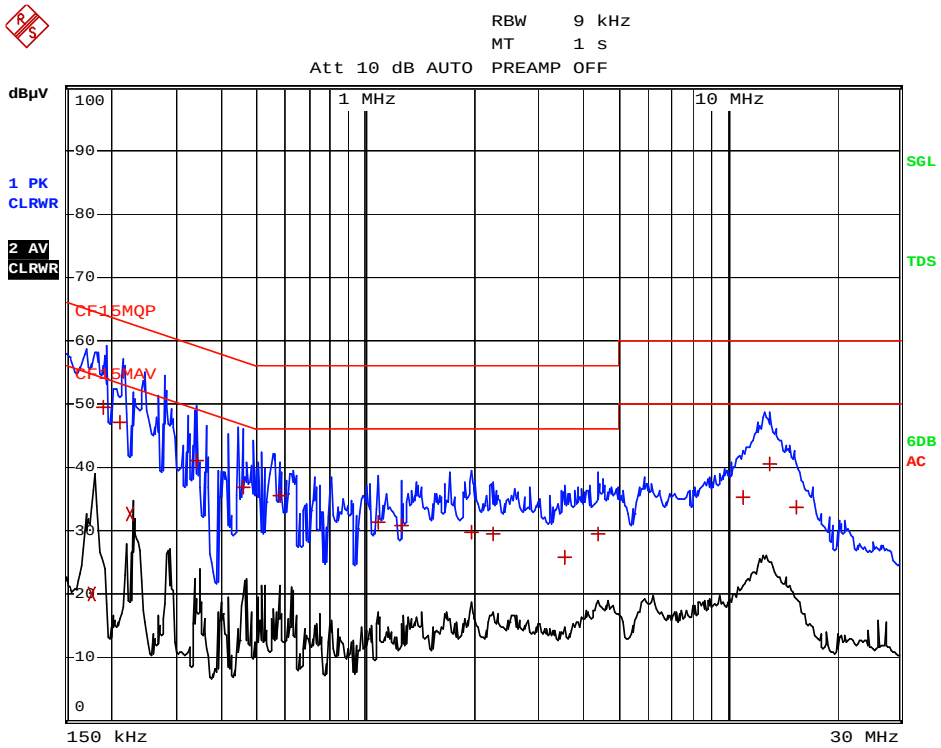
Judgment: Pass by 14.5 dB

Worst-Case Operating Mode: Purepath Wireless + Bluetooth Transmitting

EDIT PEAK LIST (Final Measurement Results)

Trace1: CF15MQP
Trace2: CF15MAV
Trace3: ---

TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
2	CISPR Average	177 kHz	20.05	L1 gnd	-34.56
1	Quasi Peak	190.5 kHz	49.50	L1 gnd	-14.50
1	Quasi Peak	213 kHz	47.20	L1 gnd	-15.88
2	CISPR Average	226.5 kHz	32.79	L1 gnd	-19.78
1	Quasi Peak	339 kHz	40.96	L1 gnd	-18.26
1	Quasi Peak	456 kHz	36.97	L1 gnd	-19.78
1	Quasi Peak	577.5 kHz	35.56	L1 gnd	-20.44
1	Quasi Peak	1.086 MHz	31.31	L1 gnd	-24.68
1	Quasi Peak	1.257 MHz	30.75	L1 gnd	-25.24
1	Quasi Peak	1.959 MHz	29.87	N gnd	-26.13
1	Quasi Peak	2.2515 MHz	29.60	N gnd	-26.39
1	Quasi Peak	3.5745 MHz	25.86	L1 gnd	-30.13
1	Quasi Peak	4.389 MHz	29.62	N gnd	-26.37
1	Quasi Peak	11.076 MHz	35.41	L1 gnd	-24.58
1	Quasi Peak	13.0695 MHz	40.43	L1 gnd	-19.56
1	Quasi Peak	15.477 MHz	33.63	L1 gnd	-26.36



Applicant: Satarii Inc Date of Test: January 30, 2014
Model: SW2782(BA)
Worst-Case Operating Mode: Transmitting (Purepath Wireless)

Table 1

Radiated Emissions
Pursuant to FCC Part 15 Section 15.249 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	2406.000	104.1	33	29.4	100.5	35.9	64.6	94.0	-29.4
V	4812.000	47.4	33	34.9	49.3	35.9	13.4	54.0	-40.6
V	7218.000	41.1	33	37.9	46.0	35.9	10.1	54.0	-43.9
V	9624.000	41.5	33	40.4	48.9	35.9	13.0	54.0	-41.0
V	12030.000	42.9	33	40.5	50.4	35.9	14.5	54.0	-39.5
V	14436.000	45.2	33	40.0	52.2	35.9	16.3	54.0	-37.7

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	2406.000	104.1	33	29.4	100.5	114.0	-13.5
V	4812.000	47.4	33	34.9	49.3	74.0	-24.7
V	7218.000	41.1	33	37.9	46.0	74.0	-28.0
V	9624.000	41.5	33	40.4	48.9	74.0	-25.1
V	12030.000	42.9	33	40.5	50.4	74.0	-23.6
V	14436.000	45.2	33	40.0	52.2	74.0	-21.8

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. For the measurement of radiated emission, summation method was used which numerical integrating (in terms of linear power) over the transmitter occupied bandwidth.

6. For the linear power measurement, data in 1MHz spacing was collected by spectrum analyzer with 1MHz resolution bandwidth.

Applicant: Satarii Inc Date of Test: January 30, 2014
Model: SW2782(BA)
Worst-Case Operating Mode: Transmitting (Purepath Wireless)

Table 2

Radiated Emissions
Pursuant to FCC Part 15 Section 15.249 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	2438.000	103.9	33	29.4	100.3	35.9	64.4	94.0	-29.6
V	4876.000	46.9	33	34.9	48.8	35.9	12.9	54.0	-41.1
V	7314.000	40.9	33	37.9	45.8	35.9	9.9	54.0	-44.1
V	9752.000	40.9	33	40.4	48.3	35.9	12.4	54.0	-41.6
V	12190.000	43.1	33	40.5	50.6	35.9	14.7	54.0	-39.3
V	14628.000	46.6	33	38.4	52.0	35.9	16.1	54.0	-37.9

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	2438.000	103.9	33	29.4	100.3	114.0	-13.7
V	4876.000	46.9	33	34.9	48.8	74.0	-25.2
V	7314.000	40.9	33	37.9	45.8	74.0	-28.2
V	9752.000	40.9	33	40.4	48.3	74.0	-25.7
V	12190.000	43.1	33	40.5	50.6	74.0	-23.4
V	14628.000	46.6	33	38.4	52.0	74.0	-22.0

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. For the measurement of radiated emission, summation method was used which numerical integrating (in terms of linear power) over the transmitter occupied bandwidth.

6. For the linear power measurement, data in 1MHz spacing was collected by spectrum analyzer with 1MHz resolution bandwidth.

Applicant: Satarii Inc Date of Test: January 30, 2014
Model: SW2782(BA)
Worst-Case Operating Mode: Transmitting (Purepath Wireless)

Table 3

Radiated Emissions
Pursuant to FCC Part 15 Section 15.249 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	2474.000	103.6	33	29.4	100.0	35.9	64.1	94.0	-29.9
V	4948.000	46.8	33	34.9	48.7	35.9	12.8	54.0	-41.2
V	7422.000	41.4	33	37.9	46.3	35.9	10.4	54.0	-43.6
V	9896.000	41.2	33	40.4	48.6	35.9	12.7	54.0	-41.3
V	12370.000	42.9	33	40.5	50.4	35.9	14.5	54.0	-39.5
V	14844.000	46.5	33	38.4	51.9	35.9	16.0	54.0	-38.0

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	2474.000	103.6	33	29.4	100.0	114.0	-14.0
V	4948.000	46.8	33	34.9	48.7	74.0	-25.3
V	7422.000	41.4	33	37.9	46.3	74.0	-27.7
V	9896.000	41.2	33	40.4	48.6	74.0	-25.4
V	12370.000	42.9	33	40.5	50.4	74.0	-23.6
V	14844.000	46.5	33	38.4	51.9	74.0	-22.1

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. For the measurement of radiated emission, summation method was used which numerical integrating (in terms of linear power) over the transmitter occupied bandwidth.

6. For the linear power measurement, data in 1MHz spacing was collected by spectrum analyzer with 1MHz resolution bandwidth.

Applicant: Satarii Inc Date of Test: February 25, 2014
Model: SW2782(BA)
Worst-Case Operating Mode: Operate with Transmission (Base with iPod)

Table 4

Radiated Emissions
Pursuant to FCC Part 15 Section 15.209 Requirement

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
H	153.270	40.2	16	15.0	39.2	43.5	-4.3
H	158.957	39.6	16	16.0	39.6	43.5	-3.9
H	160.385	39.4	16	16.0	39.4	43.5	-4.1
H	163.335	37.8	16	17.0	38.8	43.5	-4.7
H	169.115	35.6	16	18.0	37.6	43.5	-5.9
H	183.135	34.6	16	20.0	38.6	43.5	-4.9
H	190.795	39.3	16	16.0	39.3	43.5	-4.2
H	193.630	38.5	16	16.0	38.5	43.5	-5.0
H	259.295	32.0	16	21.0	37.0	46.0	-9.0
H	322.500	27.4	16	23.0	34.4	46.0	-11.6
H	345.625	25.0	16	24.0	33.0	46.0	-13.0

NOTES:
1. Peak Detector is used for emission measurement.
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. The measured result at 153.270MHz, 158.957MHz, 160.385MHz, 163.335MHz, 183.135MHz, 190.795MHz and 193.630MHz are below the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to state compliance based on the 95% level of confidence. However, the result indicates that compliance is more probable than non-compliance with the specification limit.

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.

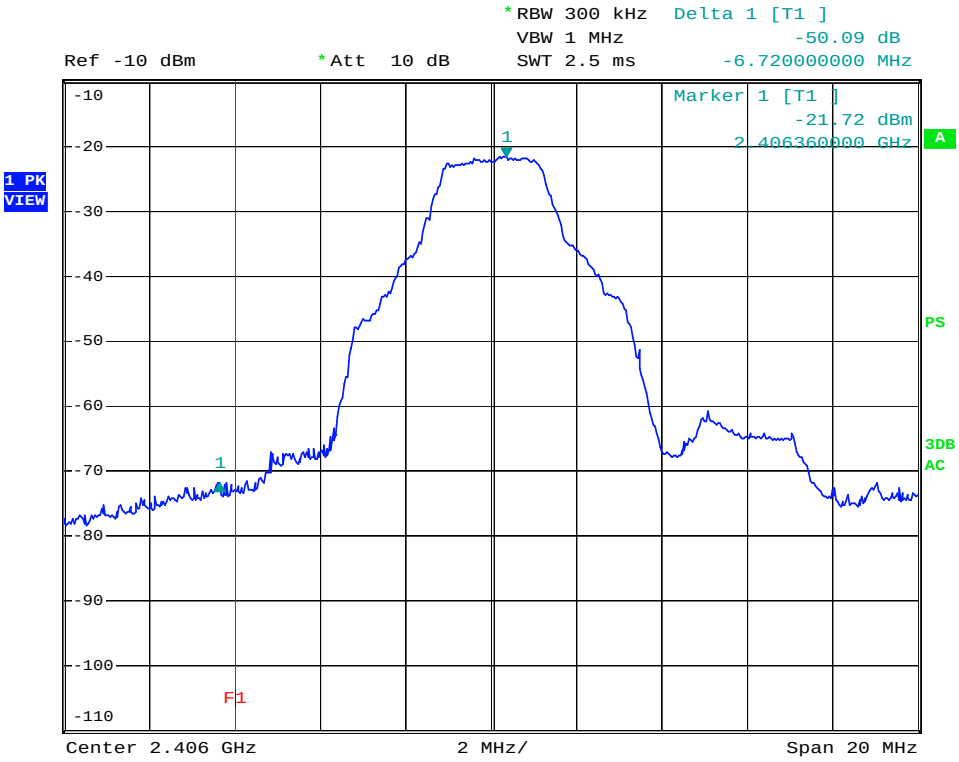
8.0 Miscellaneous Information

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 Measured Bandwidth

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 C63.4 (2009) 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, whichever is the lesser attenuation, which meet the requirement of part 15.249(d).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-6.720000000 MHz
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VIEW
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PS
3DB
AC
F1
Center 2.406 GHz
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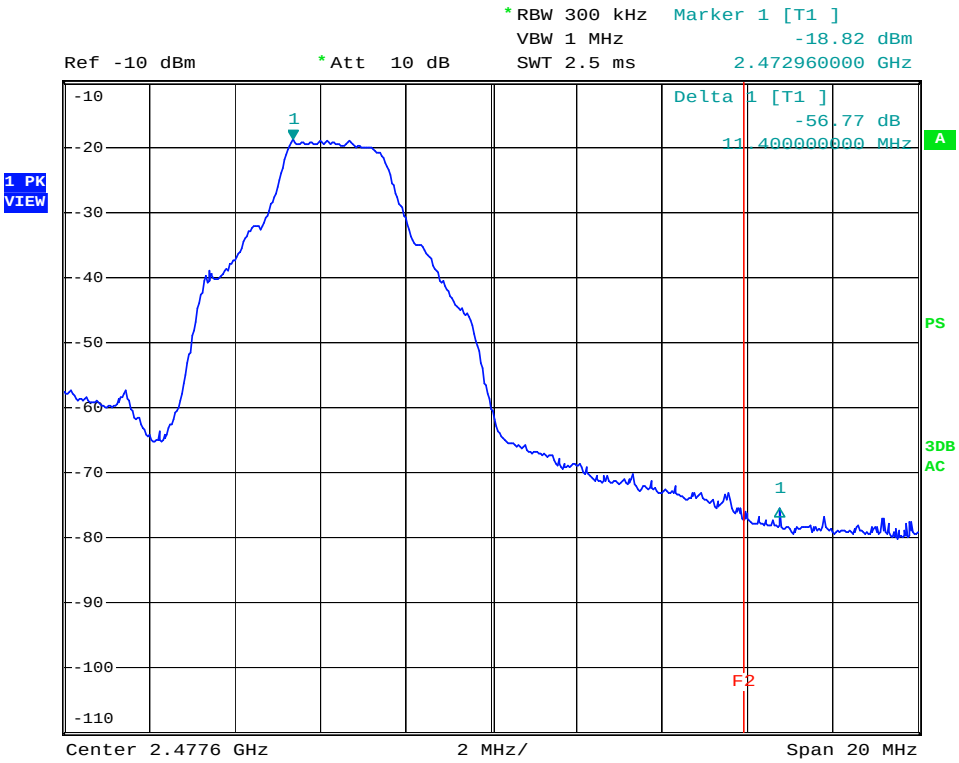
Span 20 MHz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VBW 1 MHz
SWT 2.5 ms
Marker 1 [T1]
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Ref -10 dBm
*Att 10 dB
Delta 1 [T1]
-56.77 dB
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1 PK
VIEW
A
PS
3DB
AC
F2
Center 2.4776 GHz
2 MHz/
Span 20 MHz

Peak Measurement

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

=100.5 dBµV/m - 50.1 dB
=50.4 dBµV/m

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

=64.6 dBµV/m - 50.1 dB
=14.5 dBµV/m

Upper bandedge

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

=100.0 dBµV/m - 56.8 dB
=43.2 dBµV/m

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

=64.1 dBµV/m - 56.8 dB
=7.3 dBµV/m

The resultant field strength meets the general radiated emission limit in section 15.209, 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 0.20ms 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

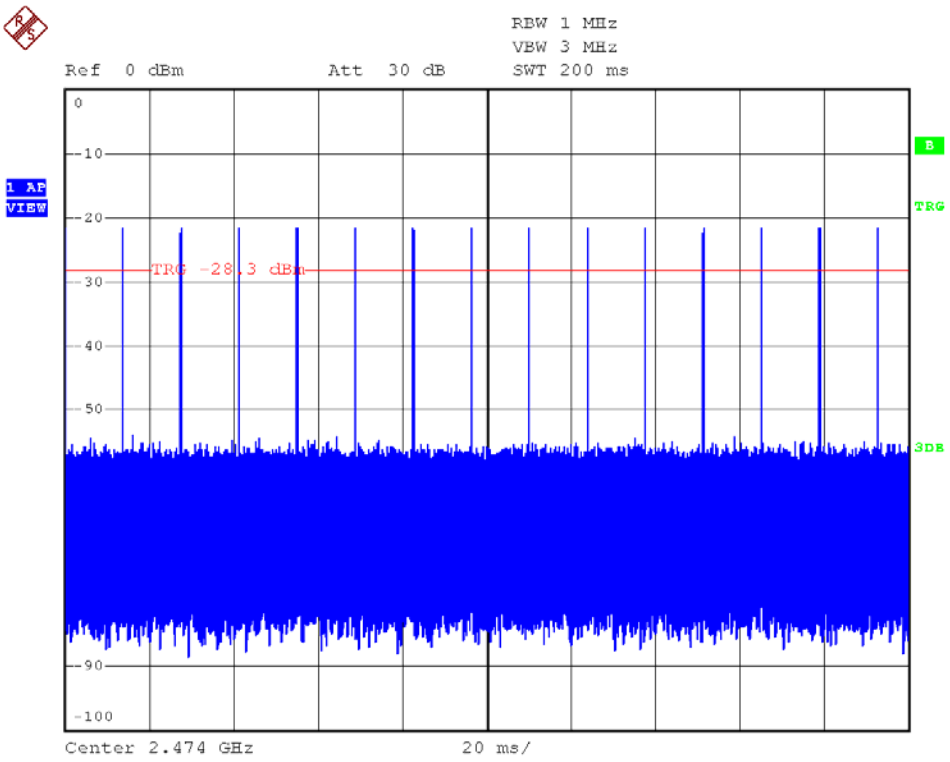
The duty cycle is simply the on-time divided by the period:

The duration of one cycle = 100 ms

Effective period of the cycle = 8*0.200 = 1.600 ms

DC = 1.600 / 100 = 0.0160

Therefore, the averaging factor is found by 20log 0.0160 = -35.9dB.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VBW 3 MHz
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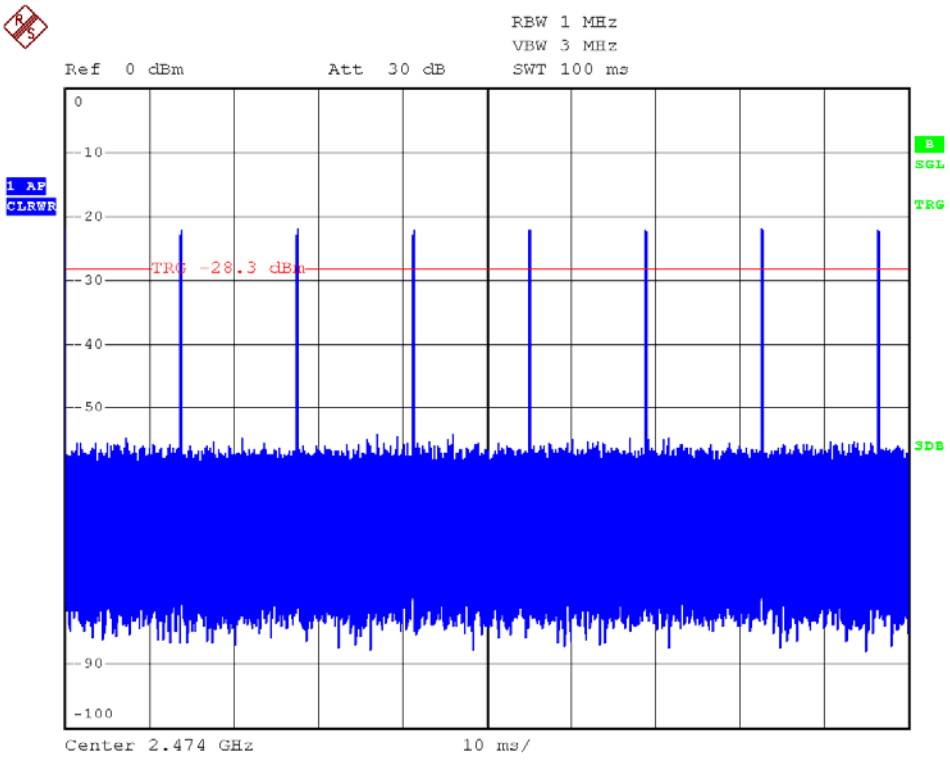
VIEW
TRG -28.3 dBm
B
TRG
3DB
Center 2.474 GHz
20 ms/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VBW 3 MHz
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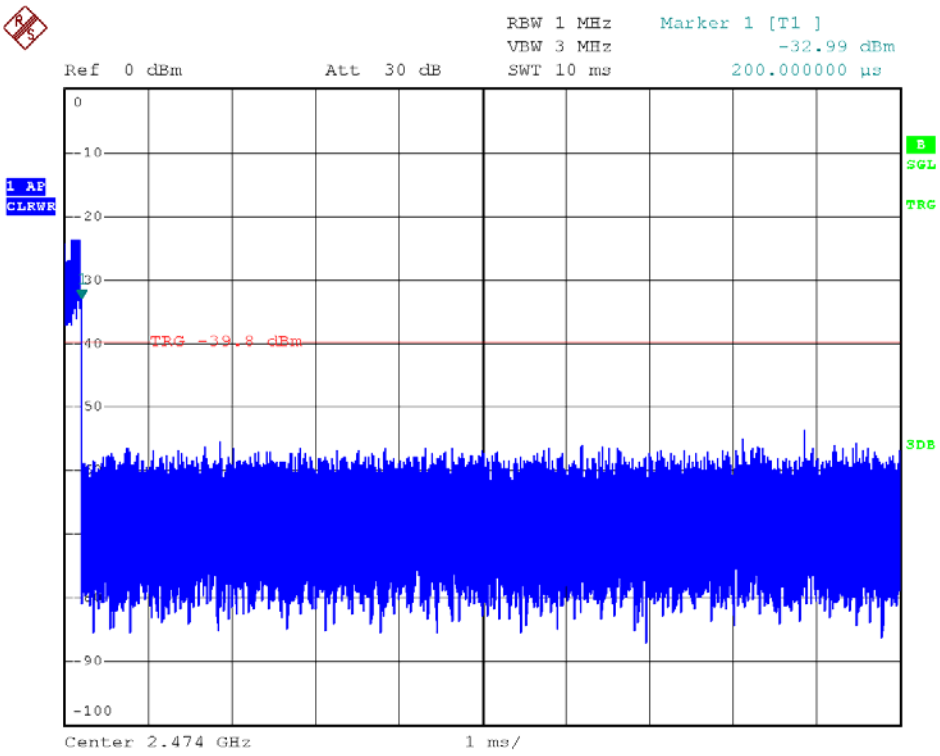
SGL
TRG
3DB
Center 2.474 GHz
10 ms/


RBW 1 MHz
VBW 3 MHz
SWT 10 ms
Marker 1 [T1]
-32.99 dBm
200.000000 µs
Ref 0 dBm
Att 30 dB
1 AP
CLRWR
B
SGL
TRG
3DB
TRG -39.8 dBm
0
-10
-20
-30
-40
-50
-90
-100
Center 2.474 GHz
1 ms/

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 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 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.

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 C63.4 (2009).

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 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 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.

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	Biconical Antenna	Log Periodic Antenna
Registration No.	EW-2500	EW-0954	EW-0446
Manufacturer	R&S	EMCO	EMCO
Model No.	ESCI	3104C	3146
Calibration Date	Mar. 22, 2013	Apr. 30, 2013	Apr. 30, 2013
Calibration Due Date	Feb. 28, 2014	Oct. 30, 2014	Oct. 30, 2014

Equipment	Spectrum Analyzer	Double Ridged Guide Antenna
Registration No.	EW-2249	EW-1133
Manufacturer	R&S	EMCO
Model No.	FSP30	3115
Calibration Date	Oct. 28, 2013	Oct. 05, 2012
Calibration Due Date	Oct. 28, 2014	Apr. 05, 2014

2) Conducted Emissions Test

Equipment	EMI Test Receiver	LISN
Registration No.	EW-2500	EW-2501
Manufacturer	R&S	R&S
Model No.	ESCI	ENV-216
Calibration Date	Mar. 22, 2013	Dec. 25, 2013
Calibration Due Date	Feb. 28, 2014	Nov. 30, 2014

3) Bandedge Measurement

Equipment	Spectrum Analyzer
Registration No.	EW-2329
Manufacturer	R&S
Model No.	FSP3
Calibration Date	Jan. 30, 2013
Calibration Due Date	Apr. 30, 2014