2/F., Garment Centre,
576 Castle Peak Road, Kowloon,
Hong Kong SAR, China.

Telephone: (852) 2173 8888
Facsimile: (852) 2785 5487
www.intertek.com

TEST REPORT

Report No.: 20090025HKG-002

Cambridge Sleep Sciences Ltd.

Application For Certification
(Original Grant)

FCC ID: 2AXKB-GC6583-SH1

Transceiver

This report contains the data of Bluetooth 3.0 portion only

Prepared and Checked by:	**Approved by:**
Signed On File Wong Cheuk Ho, Herbert Lead Engineer	Digitally signed by Kenneth Wong Location: Intertek Testing Services Hong Kong Limited Wong Kwok Yeung, Kenneth Senior Lead Engineer Date: October 05, 2020

TEST REPORT

GENERAL INFORMATION

Grantee:	Cambridge Sleep Sciences Ltd.
Grantee Address:	115B Innovation Drive, Milton Park, Abingdon, Oxfordshire OX14 4RZ United Kingdom
Contact Person:	Dr Julian Stone
Tel:	+44 238 0111 555
Fax:	+44 238 0111 555
e-mail:	julian.stone@cambridgesleepsciences.com
Brand Name:	SleepHub
Model:	SH1
Type of EUT:	Transceiver
Description of EUT:	SleepHub Provides Scientifically Formulated Sounds To Generate Guided Sleep Cycles For The User
Serial Number:	N/A
FCC ID:	2AXKB-GC6583-SH1
Date of Sample Submitted:	September 01, 2020
Date of Test:	September 01, 2020 to September 24, 2020
Report No.:	20090025HKG-002
Report Date:	October 05, 2020
Environmental Conditions:	Temperature: +10 to 40°C Humidity: 10 to 90%
Conclusion:	Test was conducted by client submitted sample. The submitted sample as received complied with the 47 CFR Part 15 Certification.

TEST REPORT

SUMMARY OF TEST RESULT

Test Specification	Reference	Results
Transmitter Power Line Conducted Emissions	15.207	Pass
Radiated Emission Radiated Emission on the Bandedge	15.249, 15.209	Pass
Radiated Emission in Restricted Bands	15.205	Pass

The equipment under test is found to be complying with the following standards:
FCC Part 15, October 1, 2019 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.

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TEST REPORT

1.0 GENERAL DESCRIPTION

1.1 Product Description

The Equipment-Under-Test (EUT) is a SleepHub Provides Scientifically Formulated Sounds To Generate Guided Sleep Cycles For The User. The EUT has wifi and Bluetooth features.

For the WLAN (WiFi) module:
For 2.400-2.4835GHz:
The Equipment Under Test (EUT) operates at frequency range of 2412MHz to 2462MHz with 11 channels. 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 (with 20MHz bandwidth) 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 support up to 65Mbps.

For the Bluetooth 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.

For Bluetooth 3.0 mode, it occupies a frequency range from 2402MHz to 2480MHz (79 channels with channel spacing of 1MHz). It transmits via GFSK modulation.

The EUT is power by a AC Adaptor (Model: PG653-1903420D).

The antenna(s) used in the EUT is integral, and the test sample is a prototype.

The circuit description is saved with filename: descri.pdf.

This report contains the data of Bluetooth 3.0 portion only.

1.2 Related Submittal(s) Grants

This is a single application for certification of a transceiver (Bluetooth 3.0 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.

TEST REPORT

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 SAR, China. This test facility and site measurement data have been placed on file with the FCC.

TEST REPORT

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 120VAC during test.

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 any intentional radiator powered by AC power line, measurements of the radiated signal level of the fundamental frequency component of the emission was performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage

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

Different data rates have been tested. Worst case is reported only.

All relevant operation modes have been tested, and the worst-case data is included in this report.

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

2.2 EUT Exercising Software

The ETU exercise program (if any) used during radiated testing was designed to exercise the various system components in a manner similar to a typical use.

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.

Uncertainty and Compliance - Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

TEST REPORT

2.5 Support Equipment List and Description

1. 2x Speaker cable (Left channel 2m in length and Right channel 5m in length)
2. 2x Loudspeaker
3. An AC/DC adaptor (Model: PG653-1903420D)
   Input: 100-240V AC 50/60Hz 1.5A
   Output: 19VDC 3.42A
   (Provided by Client)
4. 5-olm load with USB cable 0.8m in length
   (Provided by Intertek)

TEST REPORT

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

TEST REPORT

3.2 Radiated Emission Configuration Photograph

The worst case in radiated emission was found at 395.988 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 4.2 dB

3.4 Conducted Emission Configuration Photograph

The worst case in line-conducted emission was found at 2.819 MHz

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

3.5 Conducted Emission Data

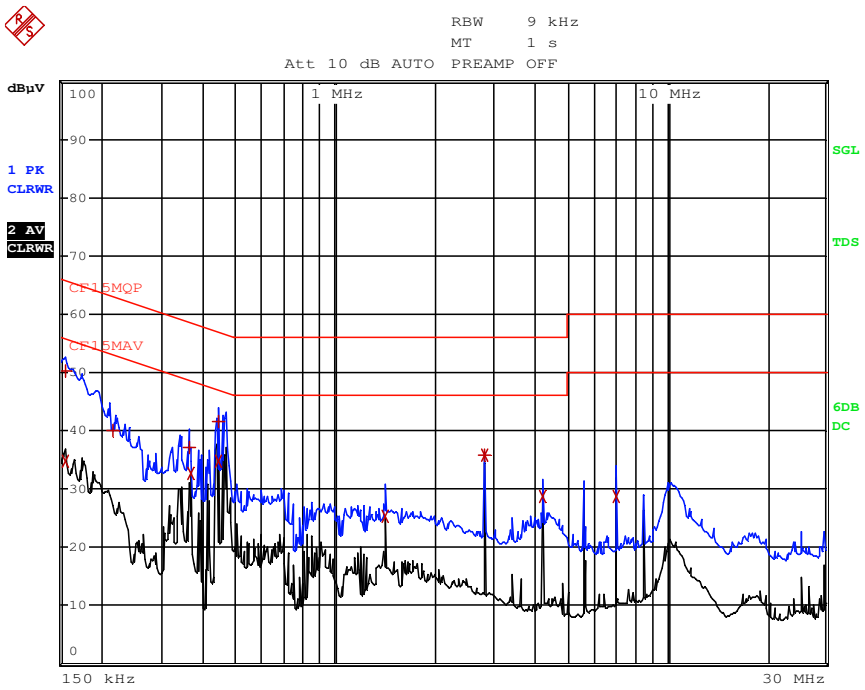
For electronic filing, the graph and data table of conducted emission is saved with filename: conducted.pdf.

Judgment: Pass by 10.3 dB

TEST REPORT

CONDUCTED EMISSION

Model: SH1
Date of Test: September 22, 2020
Worst-Case Operating Mode: Wifi + Bluetooth + Charging



EDIT PEAK LIST (Final Measurement Results)

Trace1: CF15MQP
Trace2: CF15MAV
Trace3: ---

TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	154.5 kHz	50.30	N	-15.45
2	CISPR Average	154.5 kHz	34.74	N	-21.01
1	Quasi Peak	217.5 kHz	40.15	N	-22.76
1	Quasi Peak	361.5 kHz	37.08	N	-21.60
2	CISPR Average	366 kHz	32.65	N	-15.94
1	Quasi Peak	442.5 kHz	41.54	L1	-15.46
2	CISPR Average	442.5 kHz	34.70	N	-12.31
2	CISPR Average	1.41 MHz	25.33	N	-20.66
1	Quasi Peak	2.8185 MHz	35.72	L1	-20.27
2	CISPR Average	2.8185 MHz	35.71	L1	-10.28
2	CISPR Average	4.2315 MHz	28.70	N	-17.29
2	CISPR Average	7.053 MHz	28.62	L1	-21.37

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

TEST REPORT

RADIATED EMISSIONS

Model: SH1
Date of Test: September 22, 2020
Worst-Case Operating Mode: Transmitting (Bluetooth 3.0)

Table 1
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 - Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	2402.000	81.8	33	29.4	78.2	94.0	-15.8
H	***4804.000***	***35.3***	***33***	***34.9***	***37.2***	***54.0***	***-16.8***
H	7206.000	31.3	33	37.9	36.2	54.0	-17.8
H	9608.000	29.0	33	40.4	36.4	54.0	-17.6
H	***12010.000***	***31.1***	***33***	***40.5***	***38.6***	***54.0***	***-15.4***
H	14412.000	25.2	33	40.0	32.2	54.0	-21.8

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	101.6	33	29.4	98.0	114.0	-16.0
H	***4804.000***	***44.5***	***33***	***34.9***	***46.4***	***74.0***	***-27.6***
H	7206.000	43.7	33	37.9	48.6	74.0	-25.4
H	9608.000	36.1	33	40.4	43.5	74.0	-30.5
H	***12010.000***	***36.7***	***33***	***40.5***	***44.2***	***74.0***	***-29.8***
H	14412.000	37.4	33	40.0	44.4	74.0	-29.6

NOTES:
1. Peak Detector Data unless otherwise stated.
2. Average detector is applied according to ANSI C63.10.
3. All measurements were made at 3 meters.
4. Negative sign in the column shows value below limit.
5. Horn antenna is used for the emission over 1000MHz.
6. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205.
7. Measurement Uncertainty is ±5.3dB at a level of confidence of 95%.

TEST REPORT

Model: SH1
Date of Test: September 22, 2020
Worst-Case Operating Mode: Transmitting (Bluetooth 3.0)

Table 2
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 - Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	2442.000	80.8	33	29.4	77.2	94.0	-16.8
H	***4884.000***	***36.7***	***33***	***34.9***	***38.6***	***54.0***	***-15.4***
H	***7326.000***	***33.3***	***33***	***37.9***	***38.2***	***54.0***	***-15.8***
H	9768.000	30.8	33	40.4	38.2	54.0	-15.8
H	***12210.000***	***25.3***	***33***	***40.5***	***32.8***	***54.0***	***-21.2***
H	14652.000	29.0	33	38.4	34.4	54.0	-19.6

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	2442.000	100.4	33	29.4	96.8	114.0	-17.2
H	***4884.000***	***46.7***	***33***	***34.9***	***48.6***	***74.0***	***-25.4***
H	***7326.000***	***42.5***	***33***	***37.9***	***47.4***	***74.0***	***-26.6***
H	9768.000	36.2	33	40.4	43.6	74.0	-30.4
H	***12210.000***	***37.7***	***33***	***40.5***	***45.2***	***74.0***	***-28.8***
H	14652.000	39.2	33	38.4	44.6	74.0	-29.4

NOTES:
1. Peak Detector Data unless otherwise stated.
2. Average detector is applied according to ANSI C63.10.
3. All measurements were made at 3 meters.
4. Negative sign in the column shows value below limit.
5. Horn antenna is used for the emission over 1000MHz.
6. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205.
7. Measurement Uncertainty is ±5.3dB at a level of confidence of 95%.

TEST REPORT

Model: SH1
Date of Test: September 22, 2020
Worst-Case Operating Mode: Transmitting (Bluetooth 3.0)

Table 3
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 - Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	2480.000	79.0	33	29.4	75.4	94.0	-18.6
H	***4960.000***	***36.5***	***33***	***34.9***	***38.4***	***54.0***	***-15.6***
H	***7440.000***	***34.6***	***33***	***37.9***	***39.5***	***54.0***	***-14.5***
H	9920.000	23.0	33	40.4	30.4	54.0	-23.6
H	***12400.000***	***25.7***	***33***	***40.5***	***33.2***	***54.0***	***-20.8***
H	14880.000	28.8	33	38.4	34.2	54.0	-19.8

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	99.6	33	29.4	96.0	114.0	-18.0
H	***4960.000***	***43.9***	***33***	***34.9***	***45.8***	***74.0***	***-28.2***
H	***7440.000***	***41.5***	***33***	***37.9***	***46.4***	***74.0***	***-27.6***
H	9920.000	35.8	33	40.4	43.2	74.0	-30.8
H	***12400.000***	***37.1***	***33***	***40.5***	***44.6***	***74.0***	***-29.4***
H	14880.000	39.4	33	38.4	44.8	74.0	-29.2

NOTES:
1. Peak Detector Data unless otherwise stated.
2. Average detector is applied according to ANSI C63.10.
3. All measurements were made at 3 meters.
4. Negative sign in the column shows value below limit.
5. Horn antenna is used for the emission over 1000MHz.
6. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205.
7. Measurement Uncertainty is ±5.3dB at a level of confidence of 95%.

TEST REPORT

Model: SH1
Date of Test: September 22, 2020
Worst-Case Operating Mode: Wifi + Bluetooth + Charging

Table 4
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	31.212	31.8	16	10.0	25.8	40.0	-14.2
V	76.802	38.8	16	6.0	28.8	40.0	-11.2
V	***124.938***	***25.8***	***16***	***14.0***	***23.8***	***43.5***	***-19.7***
V	167.255	22.2	16	18.0	24.2	43.5	-19.3
H	173.444	25.5	16	19.0	28.5	43.5	-15.0
H	226.215	35.6	16	18.0	37.6	46.0	-8.4
H	288.615	27.8	16	22.0	33.8	46.0	-12.2
H	395.988	32.8	16	25.0	41.8	46.0	-4.2
H	***405.252***	***32.8***	***16***	***24.0***	***40.8***	***46.0***	***-5.2***
H	449.978	30.6	16	26.0	40.6	46.0	-5.4

NOTES:
1. Quasi-Peak Detector Data unless otherwise stated.
2. All measurements were made at 3 meters.
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.
6. Measurement Uncertainty is ±5.3dB at a level of confidence of 95%.

TEST REPORT

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.

TEST REPORT

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).

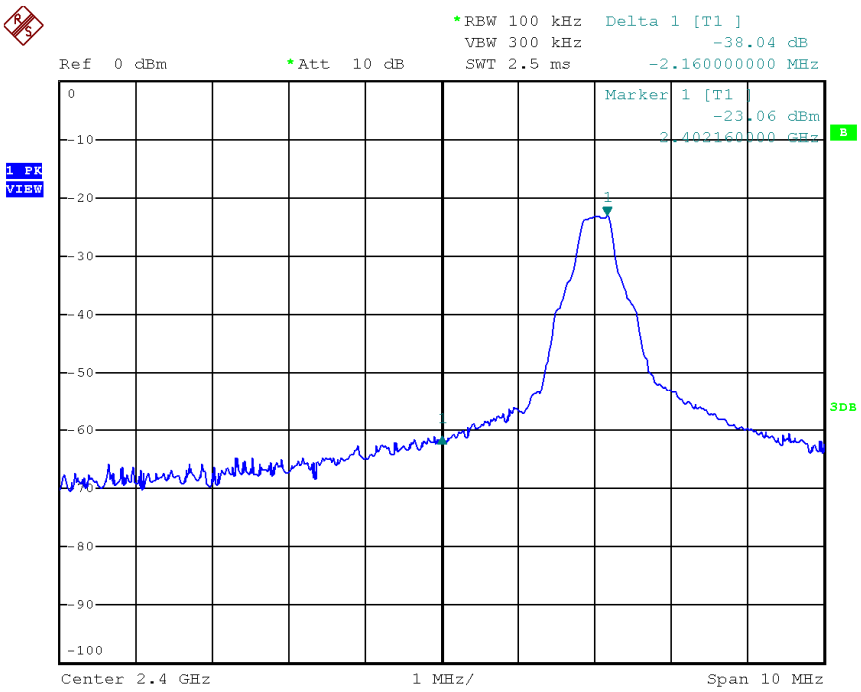
8.1 Radiated Emission on the Bandedge

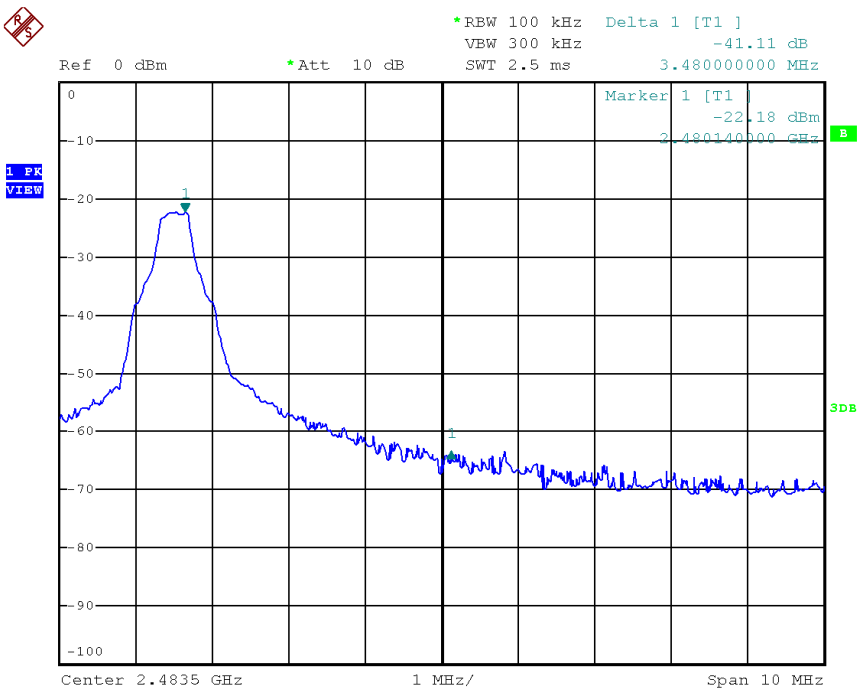
From the following plots, they show that the fundamental emissions are confined in the specified band (2400MHz to 2483.5MHz). In case of the fundamental emissions are within two standard bandwidths from the bandedge, the delta measurement technique is used for determining bandedge compliance. Standard 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 , whichever is the lesser attenuation, which meet the requirement of part 15.249(d).

TEST REPORT

PEAK MEASUREMENT (Bluetooth 3.0)





TEST REPORT

PEAK MEASUREMENT (Bluetooth 3.0)

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

=98.0 dBµV/m – 38.0 dB
=60.0 dBµV/m

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

=78.2 dBµV/m – 38.0 dB
=40.2 dBµV/m

Upper bandedge

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

=96.0 dBµV/m – 41.1 dB
=54.9 dBµV/m

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

=75.4 dBµV/m – 41.1 dB
=34.3 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).

TEST REPORT

8.2 Discussion of Pulse Desensitization

Pulse desensitivity is not applicable for this device. The effective period (Teff) is approximately 625 µs for a digital "1" bit which illustrated on technical specification, with a resolution bandwidth (3dB) of 3MHz, so the pulse desensitivity factor is 0dB.

8.3 Calculation of Average Factor

N/A.

TEST REPORT

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.

The frequency range scanned is from 30 MHz to 1000 MHz.

TEST REPORT

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).

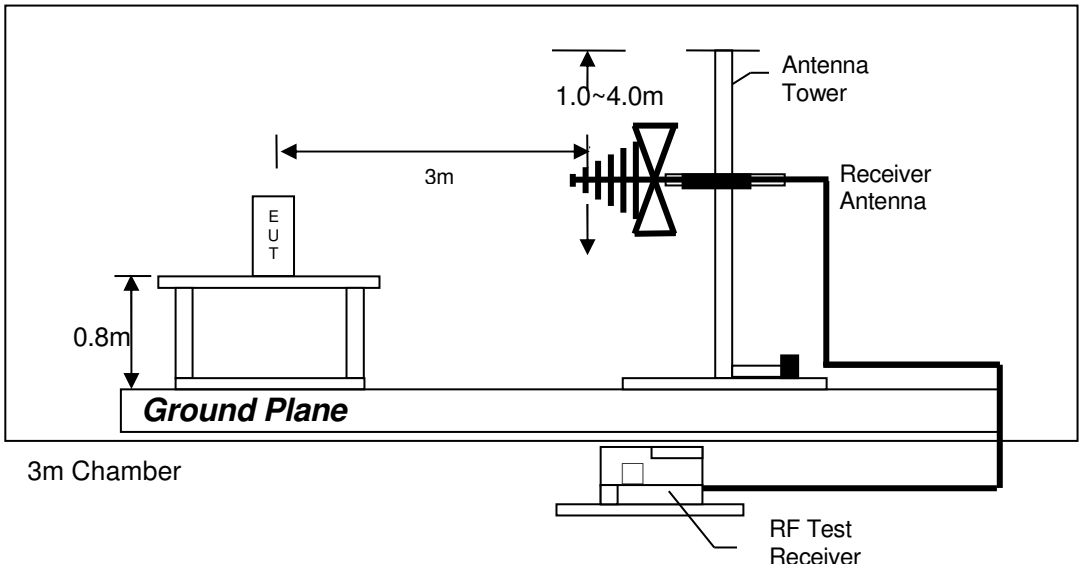
The IF bandwidth used for measurement of radiated signal strength was 100 kHz or greater when frequency is below 1000 MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. A discussion 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.

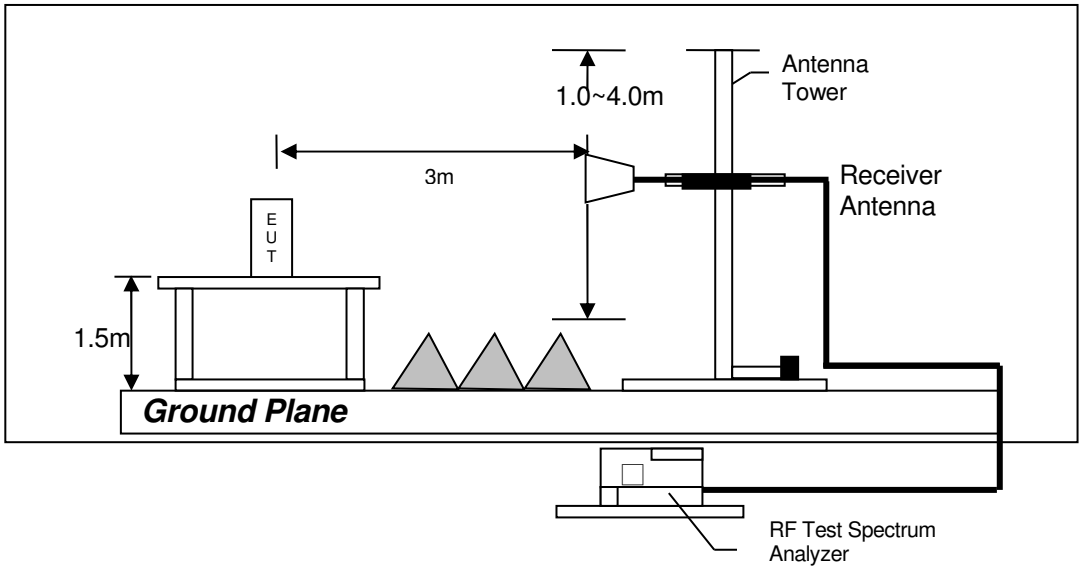
TEST REPORT

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

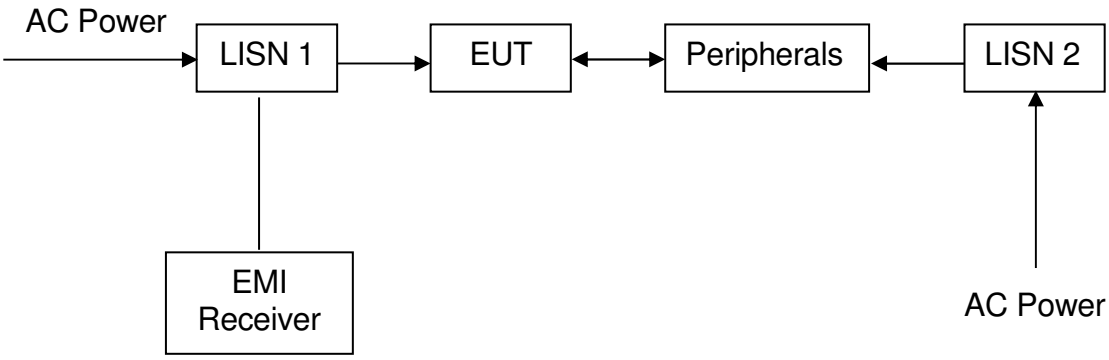
TEST REPORT

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



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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 (9kHz to 3GHz)	Spectrum Analyzer	Biconical Antenna
Registration No.	EW-2500	EW-2253	EW-0571
Manufacturer	ROHDESCHWARZ	ROHDESCHWARZ	EMCO
Model No.	ESCI	FSP40	3104C
Calibration Date	January 09, 2020	18 Nov 2019	July 23, 2019
Calibration Due Date	January 09, 2021	18 Nov 2020	July 23, 2021

Equipment	Log Periodic Antenna	Double Ridged Guide Antenna	14m Double Shield RF Cable (20MHz - 6GHz)
Registration No.	EW-0447	EW-1015	EW-2528
Manufacturer	EMCO	EMCO	RADIALL
Model No.	3146	3115	Nm-RG142-
Calibration Date	September 25, 2019	16 May 2019	30 Sep 2019
Calibration Due Date	March 25, 2021	16 Nov 2020	30 Sep 2020

Equipment	Active Loop H-field (9kHz to 30MHz)	RF Preamplifier (9kHz to 6000MHz)	2.4GHz Notch Filter
Registration No.	EW-2313	EW-3006b	EW-3435
Manufacturer	ELECTROMETRI	SCHWARZBECK	MICROWAVE
Model No.	EM-6876	BBV9718	N0324413
Calibration Date	December 17, 2019	25 Nov 2019	16 Nov 2019
Calibration Due Date	June 17, 2021	25 Nov 2020	16 Nov 2020

Equipment	RF Cable 14m (1GHz to 26.5GHz)	Pyramidal Horn Antenna
Registration No.	EW-3151	EW-0905
Manufacturer	GREATBILLION	EMCO
Model No.	SMA m/SHF5MPU /SMA m ra14m,26G	3160-09
Calibration Date	March 04, 2020	July 23, 2019
Calibration Due Date	March 04, 2021	January 23, 2021

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2) Conducted Emissions Test

Equipment	RF Cable 80cm (RG142) (9kHz to 30MHz)	Artificial Mains Network	EMI Test Receiver (9kHz to 3GHz)
Registration No.	EW-2451	EW-2501	EW-2500
Manufacturer	RADIALL	ROHDESCHWARZ	ROHDESCHWARZ
Model No.	RF Cable 80cm (RG142) (9kHz to 30MHz)	ENV-216	ESCI
Calibration Date	December 08, 2019	September 15, 2020	January 09, 2020
Calibration Due Date	December 08, 2020	September 15, 2021	January 09, 2021

3) Bandwith/Bandedge Measurement Test

Equipment	Spectrum Analyzer
Registration No.	EW-2253
Manufacturer	ROHDESCHWARZ
Model No.	FSP40
Calibration Date	18 Nov 2019
Calibration Due Date	18 Nov 2020

END OF TEST REPORT