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TEST REPORT

Report No.: 21100134HKG-001

Thomas & Darden Inc.

Application For Certification
(Original Grant)

FCC ID: 2ANJG-KS400

Transceiver – Bluetooth (FHSS) Device

This report contains the data of Bluetooth (FHSS) portion only.

Prepared and Checked by:	**Approved by:**
Signed on File Chan Hin Man, Oscar Assistant Engineer	Digitally signed by Kenneth Wong Location: Intertek Testing Services Hong Kong Limited Wong Kwok Yeung, Kenneth Assistant Supervisor Date: June 20, 2022

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TEST REPORT

GENERAL INFORMATION

Grantee:	Thomas & Darden Inc.
Grantee Address:	9101 Burning Tree Rd, Bethesda, MD 20817
Contact Person:	Nathan George
Tel:	(919) 272-8061
E-mail:	nathan@thomasdarden.com
Brand Name:	Kube sound
Model::	KS400B
Additional Model:	KS400W
Type of EUT:	Transceiver
Description of EUT:	Wi-Fi, Bluetooth, Aux-in Speaker
Serial Number:	N/A
FCC ID:	2ANJG-KS400
Date of Sample Submitted:	October 06, 2021
Date of Test:	March 25, 2022 to June 16, 2022
Report No.:	21100134HKG-001
Report Date:	June 20, 2022
Environmental Conditions:	Temperature: +10 to 40°C Humidity: 10 to 90%
Conclusion:	Test was conducted by client submitted sample. The submitted sample after modification complied with the 47 CFR Part 15 Certification. This report covers the test data of Bluetooth (FHSS) only.

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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, 2020 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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1.0 GENERAL DESCRIPTION

1.1 Product Description

The Equipment Under Test (EUT) that is a WiFi, Bluetooth Speaker. The EUT is powered by 100-240VAC, 50-60Hz and equipped with internal rechargeable battery. The EUT can support Bluetooth (FHSS) mode, Bluetooth 5.2 BLE mode, 2.4GHz WiFi mode and 5.8GHz WiFi mode.

For Bluetooth (FHSS), it operates at frequency range of 2402.000MHz to 2480.000MHz with 79 channels. It transmits via Gaussian frequency Shift Keying (GFSK) modulation. Maximum bit rate can be up to 1Mbps.

This report contains the data of Bluetooth (FHSS) portion only.

The Model: KS400W is the same as the Model: KS400B in hardware aspect as declared by client. The difference in model number serves as marketing strategy as declared by client. The models are different in color only as declared by client.

Antenna Information:

- PCB Antenna, Internal, Integral
- WLAN 802.11 a/b/g/n/ac and Bluetooth BLE
- For operating frequency of 2.4GHz, antenna has maximum gain of 2.55 dBi
- For operating frequency of 5GHz, antenna has maximum gain of 2.82 dBi

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.

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

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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 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 EUT 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

Decision Rule for compliance: For FCC/IC standard, the measured value must be within the limits of applicable standard without accounting for the measurement uncertainty. For EN/IEC/HKTA/HKTC standard, conformity rules will be used as per standard directly excepted EN/IEC 61000-3-2, EN/IEC 61000-3-3, HKTA1004, HKCA1008, HKTA1019, HKTA1020, HKTA1041 and HKTA1044. For these excepted or not mentioned standards, Cl 4.2.2 of ILAC-G8:09/2019 decision rules will be reference and guard band will be equal to our measurement uncertainty with 95% confidence level (k=2). In case, the measured value is within guard band region, undetermined decision will be used.

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.

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2.5 Support Equipment List and Description

1. 1 X Power cord of 2m in length
2. 1 X USB cable of 0.5m in length with resistive load termination

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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

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3.2 Radiated Emission Configuration Photograph

The worst case in radiated emission was found at 750.025 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 1.8 dB

3.4 Conducted Emission Configuration Photograph

The worst case in line-conducted emission was found at 1.077 MHz

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

3.5 Conducted Emission Data

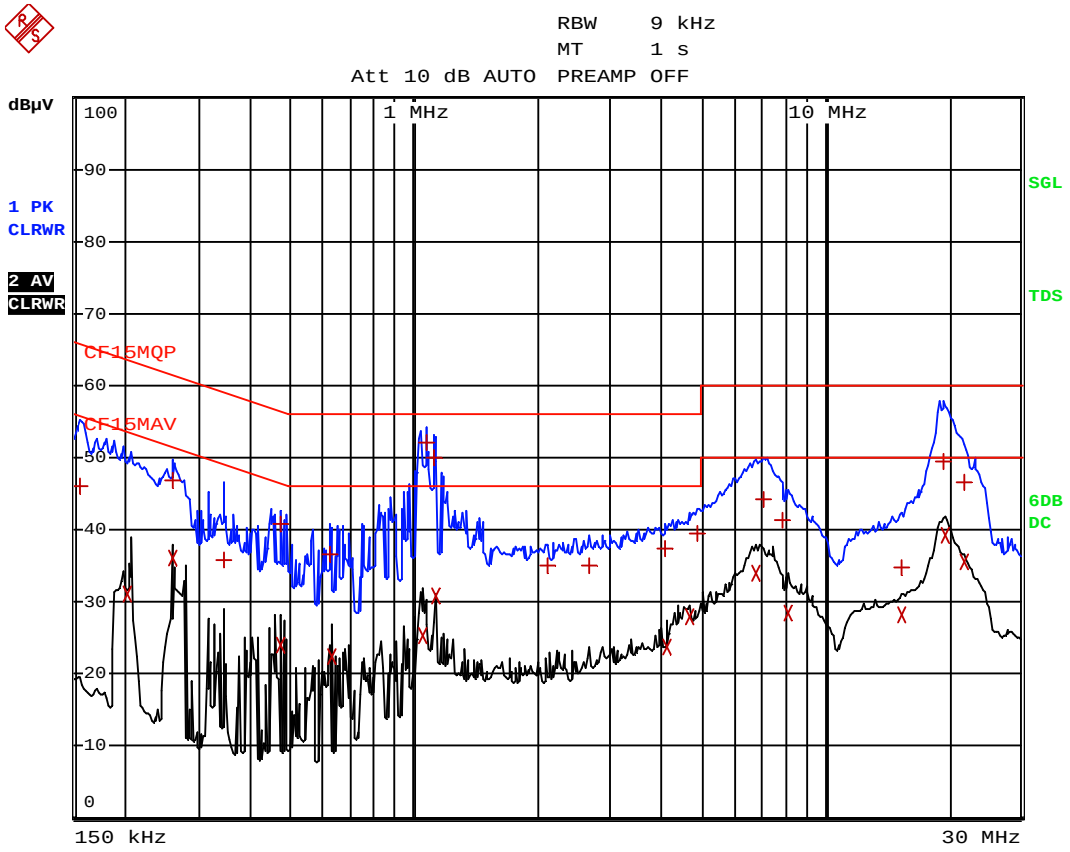
For electronic filing, the graph and data table of conducted emission is saved with filename: conducted.pdf.

Judgment: Pass by 3.9 dB

TEST REPORT

CONDUCTED EMISSION

Model: KS400B
Date of Test: June 15, 2022
Worst-Case Operating Mode: Transmitting + Charging Internal Battery + USB Charging Out



TEST REPORT

CONDUCTED EMISSION

Model: KS400B
Date of Test: June 15, 2022
Worst-Case Operating Mode: Transmitting + Charging Internal Battery + USB Charging Out

EDIT PEAK LIST (Final Measurement Results)

Trace1: CF15MQP
Trace2: CF15MAV
Trace3: ---

TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	154.5 kHz	46.07	N	-19.68
2	CISPR Average	204 kHz	31.18	L1	-22.25
1	Quasi Peak	258 kHz	46.97	L1	-14.51
2	CISPR Average	258 kHz	35.98	N	-15.50
1	Quasi Peak	343.5 kHz	35.72	L1	-23.38
1	Quasi Peak	474 kHz	40.90	L1	-15.54
2	CISPR Average	474 kHz	24.02	L1	-22.42
1	Quasi Peak	622.5 kHz	36.59	L1	-19.40
2	CISPR Average	627 kHz	22.56	L1	-23.43
2	CISPR Average	1.0455 MHz	25.24	L1	-20.75
1	Quasi Peak	1.077 MHz	52.07	L1	-3.92
1	Quasi Peak	1.122 MHz	50.08	L1	-5.91
2	CISPR Average	1.131 MHz	30.88	L1	-15.11
1	Quasi Peak	2.112 MHz	35.12	N	-20.87
1	Quasi Peak	2.6745 MHz	34.92	N	-21.07
1	Quasi Peak	4.074 MHz	37.38	N	-18.61
2	CISPR Average	4.11 MHz	23.70	N	-22.29
2	CISPR Average	4.713 MHz	27.88	N	-18.11
1	Quasi Peak	4.8975 MHz	39.54	L1	-16.45
2	CISPR Average	6.8325 MHz	34.10	L1	-15.89

EDIT PEAK LIST (Final Measurement Results)

Trace1: CF15MQP
Trace2: CF15MAV
Trace3: ---

TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	7.0845 MHz	44.16	L1	-15.84
1	Quasi Peak	7.9845 MHz	41.39	N	-18.60
2	CISPR Average	8.151 MHz	28.51	N	-21.48
2	CISPR Average	15.3465 MHz	28.22	N	-21.77
1	Quasi Peak	15.45 MHz	34.81	N	-25.18
1	Quasi Peak	19.365 MHz	49.48	N	-10.51
2	CISPR Average	19.707 MHz	39.16	N	-10.83
2	CISPR Average	21.714 MHz	35.55	N	-14.44
1	Quasi Peak	21.7635 MHz	46.71	N	-13.28

TEST REPORT

RADIATED EMISSIONS

Model: KS400B
Date of Test: June 15, 2022
Worst-Case Operating Mode: Transmitting

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	91.6	33	29.4	88.0	94.0	-6.0
V	4804.000	38.8	33	34.9	40.7	54.0	-13.3
V	7206.000	33.2	33	37.9	38.1	54.0	-15.9
V	9608.000	36.2	33	40.4	43.6	54.0	-10.4
V	12010.000	32.7	33	40.5	40.2	54.0	-13.8
V	14412.000	32.7	33	40.0	39.7	54.0	-14.3

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	102.4	33	29.4	98.8	114.0	-15.2
V	4804.000	57.5	33	34.9	59.4	74.0	-14.6
V	7206.000	42.8	33	37.9	47.7	74.0	-26.3
V	9608.000	41.0	33	40.4	48.4	74.0	-25.6
V	12010.000	35.1	33	40.5	42.6	74.0	-31.4
V	14412.000	35.7	33	40.0	42.7	74.0	-31.3

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 value in the margin column shows emission below limit.
5. Horn antenna is used for the emission over 1000MHz.
6. Emissions 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: KS400B
Date of Test: June 15, 2022
Worst-Case Operating Mode: Transmitting

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	2440.000	90.8	33	29.4	87.2	94.0	-6.8
V	4880.000	37.5	33	34.9	39.4	54.0	-14.6
V	7320.000	34.1	33	37.9	39.0	54.0	-15.0
V	9760.000	31.0	33	40.4	38.4	54.0	-15.6
V	12200.000	34.3	33	40.5	41.8	54.0	-12.2
V	14640.000	34.7	33	38.4	40.1	54.0	-13.9

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	2440.000	101.6	33	29.4	98.0	114.0	-16.0
V	4880.000	57.1	33	34.9	59.0	74.0	-15.0
V	7320.000	43.5	33	37.9	48.4	74.0	-25.6
V	9760.000	42.1	33	40.4	49.5	74.0	-24.5
V	12200.000	37.3	33	40.5	44.8	74.0	-29.2
V	14640.000	38.5	33	38.4	43.9	74.0	-30.1

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 value in the margin column shows emission below limit.
5. Horn antenna is used for the emission over 1000MHz.
6. Emissions 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: KS400B
Date of Test: June 15, 2022
Worst-Case Operating Mode: Transmitting

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	92.2	33	29.4	88.6	94.0	-5.4
V	4960.000	38.2	33	34.9	40.1	54.0	-13.9
V	7440.000	35.5	33	37.9	40.4	54.0	-13.6
V	9920.000	31.3	33	40.4	38.7	54.0	-15.3
V	12400.000	34.4	33	40.5	41.9	54.0	-12.1
V	14880.000	34.1	33	38.4	39.5	54.0	-14.5

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	102.9	33	29.4	99.3	114.0	-14.7
V	4960.000	58.4	33	34.9	60.3	74.0	-13.7
V	7440.000	43.9	33	37.9	48.8	74.0	-25.2
V	9920.000	42.0	33	40.4	49.4	74.0	-24.6
V	12400.000	37.2	33	40.5	44.7	74.0	-29.3
V	14880.000	38.1	33	38.4	43.5	74.0	-30.5

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 value in the margin column shows emission below limit.
5. Horn antenna is used for the emission over 1000MHz.
6. Emissions 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%.

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Mode: Transmitting + Charging Internal Battery + USB Charging Out

Radiated Emission Data

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
V	49.128	27.8	16	11.0	22.8	40.0	-17.2
V	106.045	37.5	16	13.0	34.5	43.5	-9.0
H	246.312	34.6	16	20.0	38.6	46.0	-7.4
V	626.788	25.8	16	29.0	38.8	46.0	-7.2
V	724.956	29.5	16	30.0	43.5	46.0	-2.5
V	750.025	30.2	16	30.0	44.2	46.0	-1.8
V	774.224	25.8	16	31.0	40.8	46.0	-5.2
V	792.265	27.8	16	31.0	42.8	46.0	-3.2

NOTES:
1. Quasi-Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters.
3. Value in the margin column shows emission below limit.
4. Emission within the restricted band meets the requirement of FCC Part 15 Section 15.205.

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.

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).

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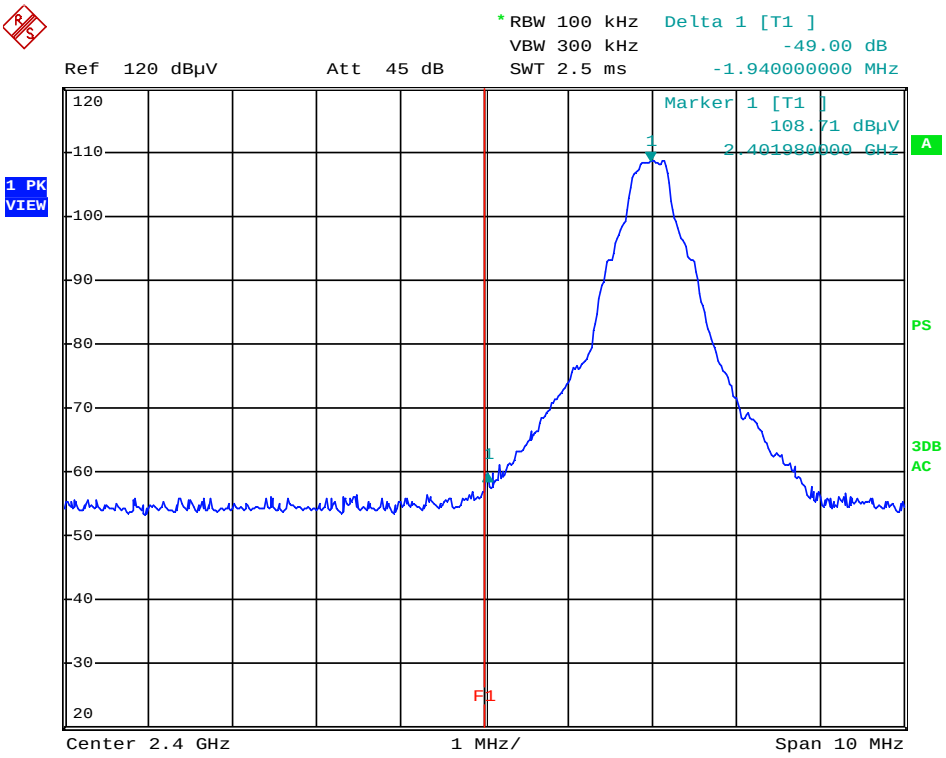
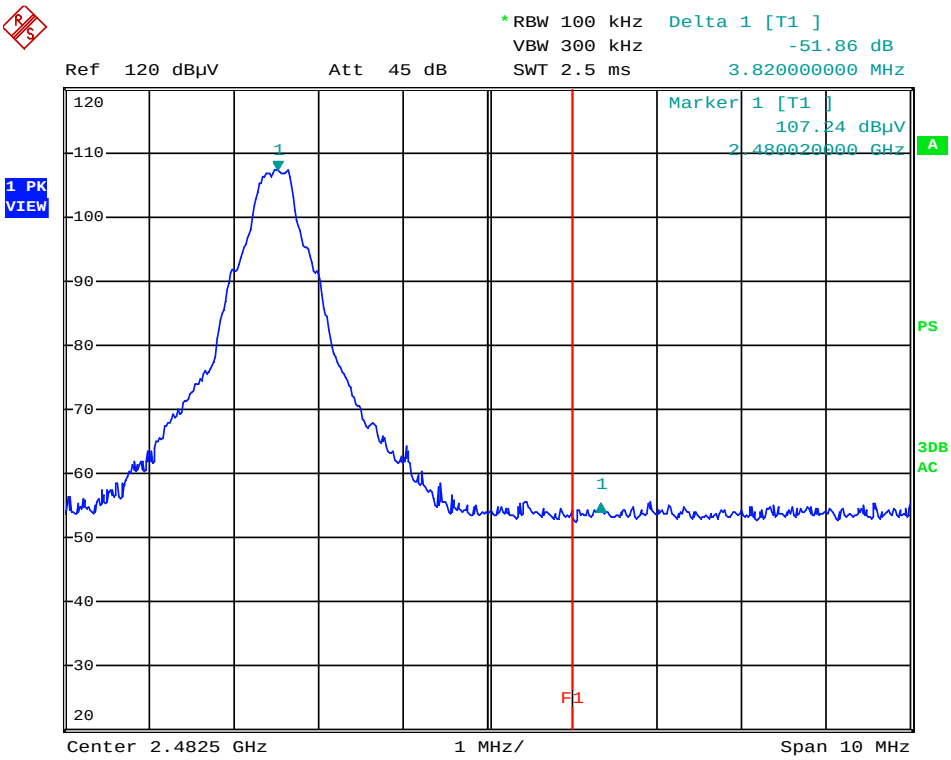
BANDEDGE MEASUREMENT





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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

=98.8 dBµV/m – 49.0 dB
=49.8 dBµV/m

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

=88.0 dBµV/m – 49.0 dB
=39.0 dBµV/m

Upper bandedge

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

=99.3 dBµV/m – 51.9 dB
=47.4 dBµV/m

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

=88.6 dBµV/m – 51.9 dB
=36.7 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 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 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).

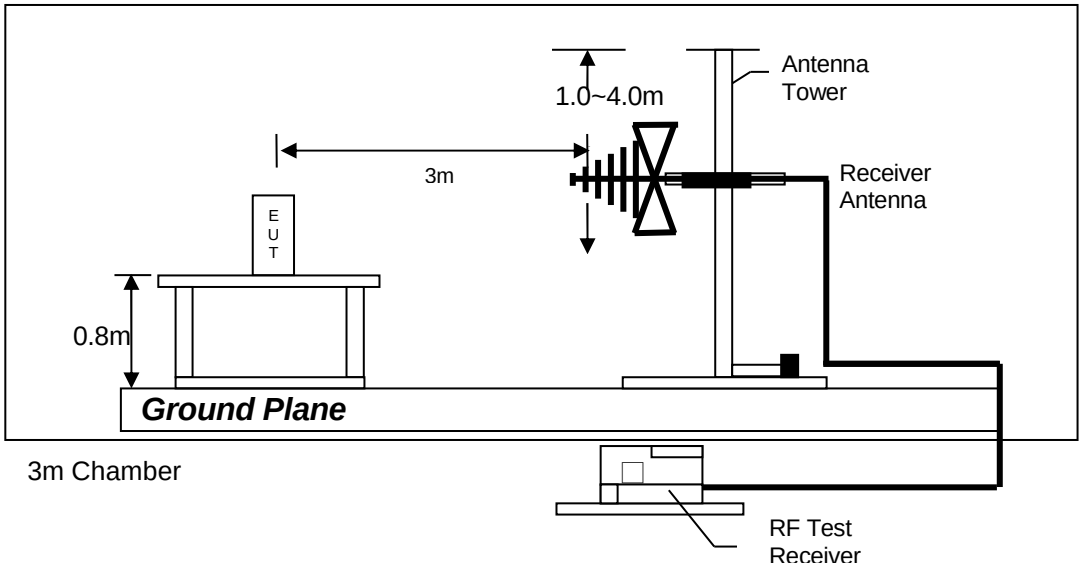
The IF bandwidth used for measurement of radiated signal strength was 100 kHz or greater when frequency is below 1000 MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. A discussion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

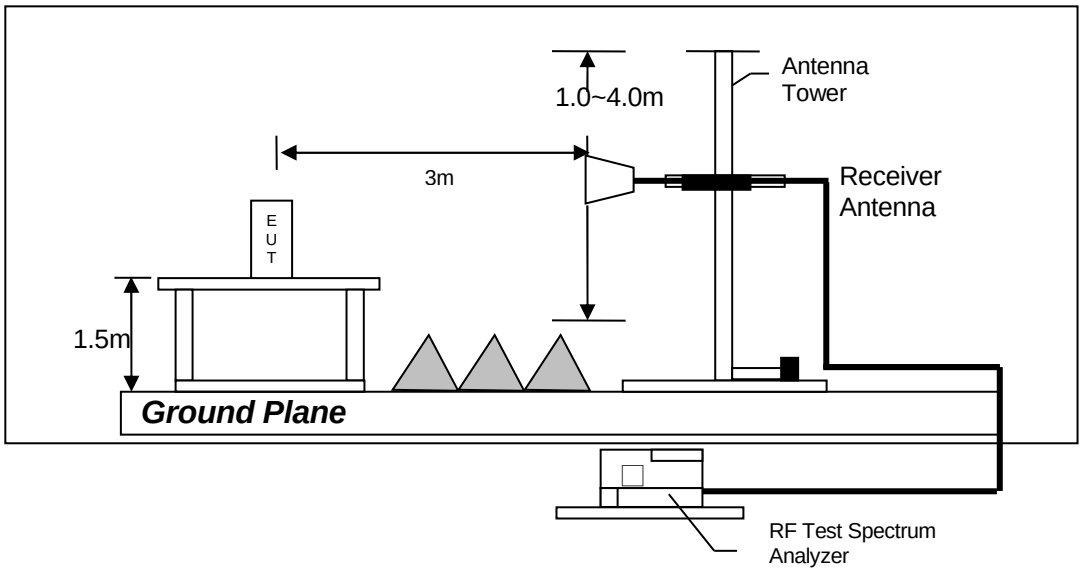
TEST REPORT

8.2.1 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

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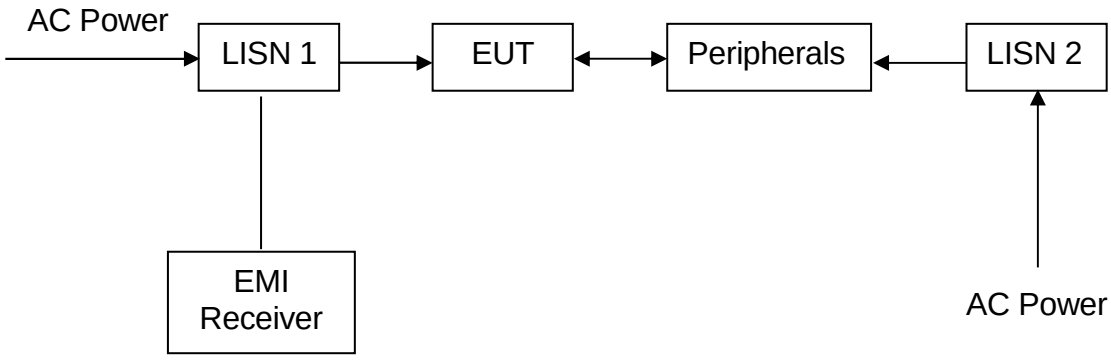
8.2.2 Conducted Emission Test Procedures

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.

8.2.3 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	Signal and Spectrum Analyzer (10Hz to 40GHz)	Biconical Antenna (20MHz to 200MHz)	EMI Test Receiver 7GHz
Registration No.	EW-3016	EW-3061	EW-3481
Manufacturer	ROHDESCHWARZ	EMCO	ROHDESCHWARZ
Model No.	FSV40	3142E	ESR7
Calibration Date	October 29, 2021	February 02, 2021	December 21, 2021
Calibration Due Date	October 29, 2022	August 02, 2022	December 21, 2022

Equipment	Log Periodic Antenna	Double Ridged Guide Antenna	Active Loop H-field (9kHz to 30MHz)
Registration No.	EW-3243	EW-1133	EW-3302
Manufacturer	EMCO	EMCO	EMCO
Model No.	3148B	3115	6502
Calibration Date	June 03, 2021	May 26, 2021	December 13, 2021
Calibration Due Date	December 30, 2022	November 26, 2022	June 13, 2023

Equipment	RF Preamplifier (9kHz to 6000MHz)	2.4GHz Notch Filter	14m Double Shield RF Cable (20MHz to 6GHz)
Registration No.	EW-3006b	EW-3435	EW-2074
Manufacturer	SCHWARZBECK	MICROWAVE	RADIALL
Model No.	BBV9718	N0324413	N(m)-RG142-BNC(m) L=14M
Calibration Date	November 25, 2019	November 16, 2019	November 14, 2019
Calibration Due Date	June 25, 2022	June 16, 2022	August 14, 2022

Equipment	RF Cable 14m (1GHz to 26.5GHz)	Pyramidal Horn Antenna
Registration No.	EW-2781	EW-0905
Manufacturer	GREATBILLION	EMCO
Model No.	SMA m/SHF5MPU /SMA m ra14m,26G	3160-09
Calibration Date	November 24, 2020	July 23, 2019
Calibration Due Date	November 24, 2022	June 23, 2022

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2) Conducted Emissions Test

Equipment	RF Cable 240cm (RG142) (9kHz to 30MHz)	Artificial Mains Network	EMI Test Receiver
Registration No.	EW-2454	EW-2501	EW-3156
Manufacturer	RADIALL	ROHDESCHWARZ	R&S
Model No.	bnc m st / 142 /bnc m ra 240cm	ENV-216	ESCI7
Calibration Date	January 26, 2022	November 09, 2021	December 21, 2021
Calibration Due Date	January 26, 2023	November 09, 2022	December 21, 2022

3) Bandedge Measurement

Equipment	Spectrum Analyzer	5m RF Cable (40GHz)
Registration No.	EW-2466	EW-2107
Manufacturer	ROHDESCHWARZ	N/A
Model No.	FSP30	SMA-M to SMA-M
Calibration Date	November 18, 2019	December 11, 2021
Calibration Due Date	August 18, 2022	December 11, 2022

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4) Control Software for Radiated Emission

Software Information	
Software Name	EMC32
Manufacturer	ROHDESCHWARZ
Software version	10.50.40

END OF TEST REPORT