



## Test Report

Date : 2018-01-15  
No. : HM17120019

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**Applicant:** SecureData, Inc.  
3255 Cahuenga Blvd. West #111, Los Angeles, CA 90068, USA

**Manufacturer:** CHASE GLORY INDUSTRIAL LIMITED  
FLAT B-D, 15/F., HARIBEST IND. BLDG. 45-47 AU PUI WAN ST., FOTAN SHATIN, N.T., HONG KONG

**Description of Sample(s):** Product: SecureDrive™ BT  
Brand Name: SECUREDATA  
Model Number: SD-BT-20-BU-5TB  
FCC ID: 2AOXICGAHSDBT

**Date Sample(s) Received:** 2017-12-06

**Date Tested:** 2017-12-21 to 2017-12-28

**Investigation Requested:** Perform ElectroMagnetic Interference measurement in accordance with FCC 47 CFR [Codes of Federal Regulations] Part 15: 2017 and ANSI C63.10: 2013 for FCC Certification.

**Conclusion(s):** The submitted product COMPLIED with the requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.

**Remark(s):** The tested model supports Bluetooth (BLE) single mode only

  
  
CHEUNG Chi, Kenneth  
Authorized Signatory  
ElectroMagnetic Compatibility Department  
For and on behalf of  
The Hong Kong Standards and Testing Centre Ltd.



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### **1.0 General Details**

#### **1.1 Test Laboratory**

The Hong Kong Standards and Testing Centre Ltd.  
EMC Laboratory  
10 Dai Wang Street, Taipo Industrial Estate

Telephone: (852) 26661888

Fax: (852) 26644353

#### **1.2 Equipment Under Test [EUT]**

##### **Description of Sample(s)**

Product: SecureDrive™ BT  
Manufacturer: Chase Glory Industrial Limited  
Flat B-D, 15/F., Haribest Ind. Bldg. 45-47 Au Pui Wan  
St., Fotan Shatin, N.T., Hong Kong  
Brand Name: SECUREDATA  
Model Number: SD-BT-20-BU-5TB  
Additional Model Number: SD-BT-XX-BU-YTB  
SD-BT-XX-BU-YTB where “X” is thickness; “Y” is the  
capacity of the product  
Rating: Input: 5.0Vd.c, Powered by USB

##### **1.2.1 Description of EUT Operation**

The Equipment Under Test (EUT) is Bluetooth Secured Portable Hardisk, which is a BLE single mode device. The R.F. signal was modulated by IC; the type of modulation used was GFSK.

#### **1.3 Date of Order**

2017-12-06

#### **1.4 Submitted Sample(s):**

2 Samples

#### **1.5 Test Duration**

2017-12-21 to 2018-01-12

#### **1.6 Country of Origin**

China

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### 1.7 Antenna Details

Antenna Type (Bluetooth): SMD Chip Antenna  
Antenna Gain (Bluetooth): 0dBi

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### 2.0 Technical Details

#### **2.1 Investigations Requested**

Perform Electromagnetic Interference measurements in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2016 Regulations. ANSI C63.10:2013 for FCC Certification.

#### **2.2 Test Standards and Results Summary Tables**

<b>EMISSION (BLUETOOTH)</b>						
<b>Results Summary</b>						
Test Condition	Test Requirement	Test Method	Class / Severity	Test Result		
				Pass	Fail	N/A
Maximum Peak Conducted Output Power	FCC 47CFR 15.247(b)(1)	ANSI C63.10:2013	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maximum Peak Conducted Output Power	FCC 47CFR 15.247(b)(1)	ANSI C63.10:2013	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Radiated Spurious Emissions	FCC 47CFR 15.209	ANSI C63.10:2013	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AC power-line conducted emissions	FCC 47CFR 15.207	ANSI C63.10:2013	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Power Spectral Density	FCC 47CFR 15.247(a)(1)	ANSI C63.10:2013	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6dB Bandwidth	FCC 47CFR 15.247(a)(1)	ANSI C63.10:2013	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Band-edge measurement (Radiated)	FCC 47CFR 15.247(d)	ANSI C63.10:2013	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Antenna requirement	FCC 47CFR 15.203	N/A	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RF Exposure	FCC 47CFR 15.247(i)	N/A	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Note: N/A – Not Applicable

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### 2.3 Table for Test Modes

Preliminary tests were performed in different data rate to find the worst radiated emission. The Modulation mode in the table below is the worst case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

#### Bluetooth

Test Items	Mode
Maximum Peak Conducted Output Power	GFSK
Power Spectral Density	GFSK
Radiated Spurious Emissions	GFSK
Band-edge compliance of Conducted Emission	GFSK

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### 3.0 Test Results

#### **3.1 Emission**

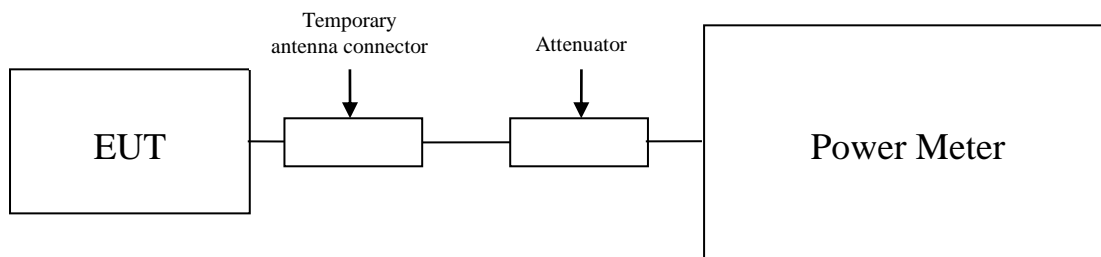
##### **3.1.1 Maximum Peak Conducted Output Power**

Test Requirement: FCC 47CFR 15.247(b)(2)  
Test Method: ANSI C63.10:2013  
Test Date: 2017-12-21  
Mode of Operation: Tx mode

#### **Test Method:**

The RF output of the EUT was connected to the Power Meter. All the attenuation or cable loss will be added to the measured maximum output power. The results are recorded in dBm.

#### **Test Setup:**



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### Limits for Maximum Peak Conducted Output Power [FCC 47CFR 15.247]:

2400–2483.5 MHz band:

The maximum peak output power shall not exceeded the following limits:

For frequency hopping systems employing at least 75 hopping channels: 1 Watt

For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 Watts

For Digital Transmission systems in 2400-2483.5 MHz Band: 1 Watt

### Results of Bluetooth mode (Fundamental Power): Pass

Transmitter Frequency (MHz)	Maximum conducted output power (Watt)
2402	0.000065

Transmitter Frequency (MHz)	Maximum conducted output power (Watt)
2440	0.000041

Transmitter Frequency (MHz)	Maximum conducted output power (Watt)
2480	0.000059

Calculated measurement uncertainty : 30MHz to 1GHz 1.7dB  
1GHz to 18GHz 1.7dB

#### Remark:

1. All test data for each data rate were verified, but only the worst case was reported.
2. The EUT is programmed to transmit signals continuously for all testing.

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### 3.1.2 Conducted Emissions (0.15MHz to 30MHz)

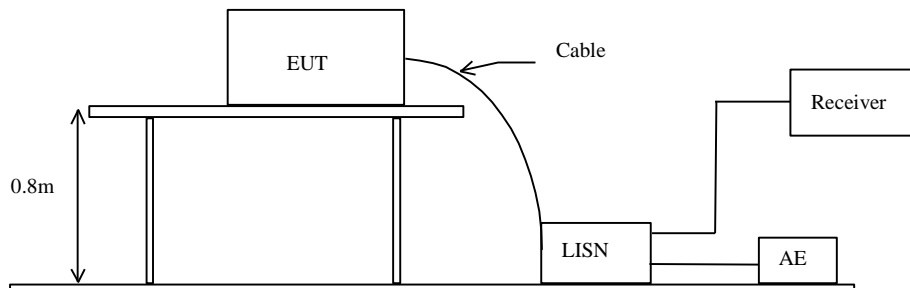
Test Requirement: FCC 47CFR 15.207  
Test Method: ANSI C63.10:2013  
Test Date: 2017-12-21

Mode of Operation: Tx mode connected to PC (PC Side)

#### Test Method:

The test was performed in accordance with ANSI C63.10:2013, with the following: an initial measurement was performed in peak and average detection mode on the live line, any emissions recorded within 30dB of the relevant limit line were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.

#### Test Setup:



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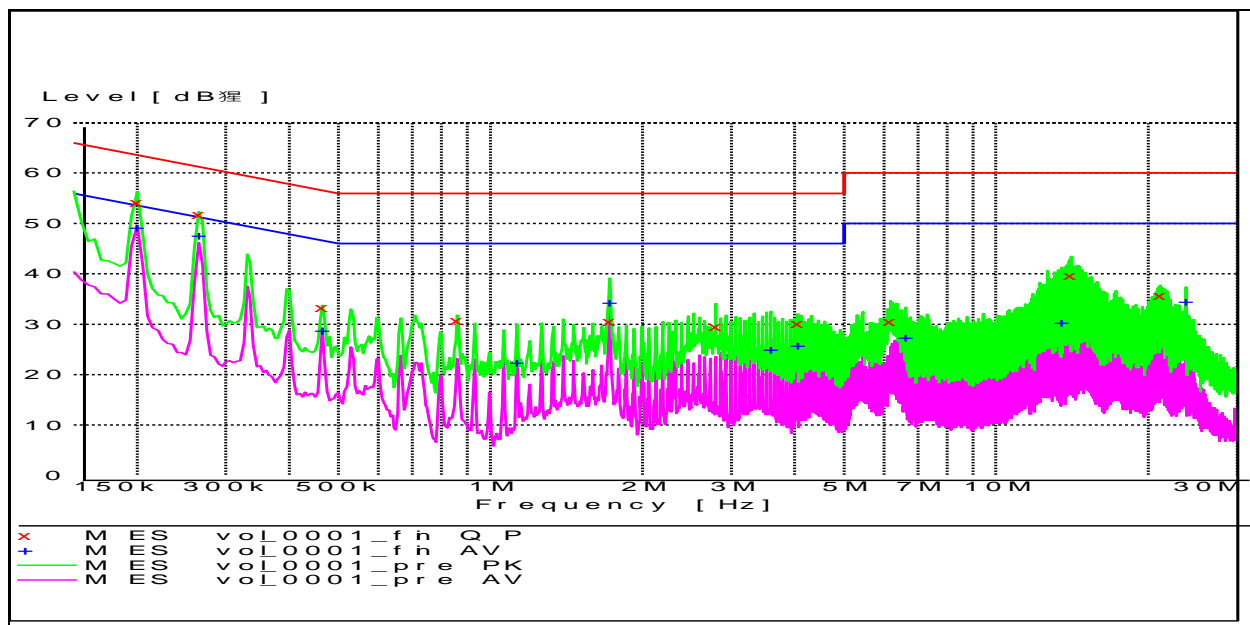
**Limit for Conducted Emissions (FCC 47CFR 15.207):**

Frequency Range [MHz]	Quasi-Peak Limits [dB $\mu$ V]	Average [dB $\mu$ V]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

\* Decreases with the logarithm of the frequency.

Limits for Conducted Emissions Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.

**Results of Tx mode – Live and Neutral: PASS**



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### **MEASUREMENT RESULT: "vol\_0001\_fin QP"**

Frequency MHz	Level dB $\mu$ V	Transd dB	Limit dB $\mu$ V	Margin dB	Line	PE
0.200000	54.20	9.9	64	9.4	L1	GND
0.265000	51.70	9.9	61	9.6	N	GND
0.465000	33.20	10.0	57	23.4	N	GND
0.860000	30.80	9.8	56	25.2	L1	GND
1.720000	30.50	10.0	56	25.5	N	GND
2.790000	29.60	10.3	56	26.4	L1	GND
4.050000	30.20	10.5	56	25.8	N	GND
6.175000	30.50	10.6	60	29.5	L1	GND
14.075000	39.70	10.7	60	20.3	N	GND
21.115000	35.60	10.8	60	24.4	N	GND

### **MEASUREMENT RESULT: "vol\_0001\_fin AV"**

Frequency MHz	Level dB $\mu$ V	Transd dB	Limit dB $\mu$ V	Margin dB	Line	PE
0.200000	49.20	9.9	54	4.4	L1	GND
0.265000	47.60	9.9	51	3.7	N	GND
0.465000	28.80	10.0	47	17.8	L1	GND
1.130000	22.50	9.8	46	23.5	N	GND
1.720000	34.30	10.0	46	11.7	L1	GND
3.585000	25.00	10.4	46	21.0	N	GND
4.050000	25.80	10.5	46	20.2	N	GND
6.640000	27.30	10.6	50	22.7	L1	GND
13.475000	30.30	10.7	50	19.7	N	GND
23.755000	34.50	10.9	50	15.5	N	GND

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### 3.1.3 Radiated Spurious Emissions

Test Requirement: FCC 47CFR 15.209  
Test Method: ANSI C63.10:2013  
Test Date: 2017-01-12  
Mode of Operation: Tx mode connected to PC

#### **Test Method:**

For emission measurements at or below 1 GHz, the sample was placed 0.8m above the ground plane of semi-anechoic Chamber\*. For emission measurements above 1 GHz, the sample was placed 1.5m above the ground plane of semi-anechoic Chamber\*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

The frequency range from 9kHz to the 10<sup>th</sup> harmonic of the fundamental transmitter was observed.

\* The Hong Kong Standards and Testing Centre Ltd.

FCC Test Firm Registration Number 723883 Designation Number HK0001

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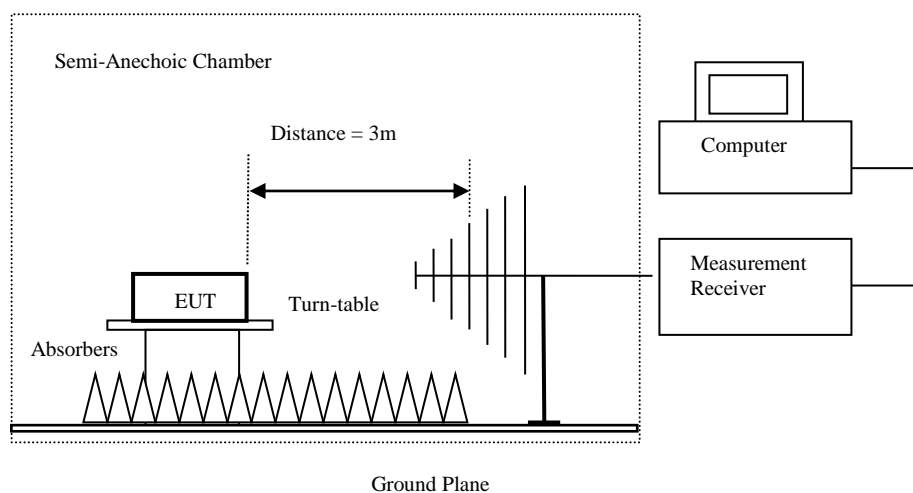
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### Spectrum Analyzer Setting:

9KHz – 30MHz (Pk & Av)	RBW: 10kHz
	VBW: 30kHz
	Sweep: Auto
	Span: Fully capture the emissions being measured
	Trace: Max. hold
30MHz – 1GHz (QP)	RBW: 120kHz
	VBW: 120kHz
	Sweep: Auto
	Span: Fully capture the emissions being measured
	Trace: Max. hold
Above 1GHz (Pk & Av)	RBW: 1MHz
	VBW: 3MHz
	Sweep: Auto
	Span: Fully capture the emissions being measured
	Trace: Max. hold

### Test Setup:



- Absorbers placed on top of the ground plane are for measurements above 1000MHz only.
- Measurements between 30MHz to 1000MHz made with Bi-log antennas, above 1000MHz horn antennas are used, 9kHz to 30MHz loop antennas are used.

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### Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range [MHz]	Quasi-Peak Limits [ $\mu$ V/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

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**Result of Tx mode connected to PC, (Bluetooth: 2402.0 MHz) (GFSK mode) (9kHz – 30MHz): Pass**

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
<b>Emissions detected are more than 20 dB below the FCC Limits</b>						

**Result of Tx mode connected to PC, (Bluetooth: 2402.0 MHz) (GFSK mode) (30MHz – 1GHz): Pass**

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
<b>Emissions detected are more than 20 dB below the FCC Limits</b>						

**Result of Tx mode connected to PC, (Bluetooth: 2402.0 MHz) (GFSK mode) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dB	E-Field Polarity
4804.0	1.9	42.4	44.3	74.0	29.7	Horizontal
7206.0	2.3	46.2	48.5	74.0	25.5	Horizontal
9608.0	1.3	48.8	50.1	74.0	23.9	Horizontal
12010.0	0.5	52.4	52.9	74.0	21.1	Horizontal

**Result of Tx mode connected to PC, (Bluetooth: 2402.0 MHz) (GFSK mode) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
4804.0	-7.9	42.4	34.5	54.0	19.5	Horizontal
7206.0	-6.3	46.2	39.9	54.0	14.1	Horizontal
9608.0	-10.7	48.8	38.1	54.0	15.9	Horizontal
12010.0	-11.3	52.4	41.1	54.0	12.9	Horizontal

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**Result of Tx mode connected to PC, (Bluetooth: 2440.0 MHz) (GFSK mode) (9kHz – 30MHz): Pass**

<b>Field Strength of Spurious Emissions</b>						
<b>Peak Value</b>						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
<b>Emissions detected are more than 20 dB below the FCC Limits</b>						

**Results of Tx mode connected to PC, (Bluetooth: 2440.0 MHz) (GFSK mode) (30MHz – 1000MHz): PASS**

<b>Field Strength of Spurious Emissions</b>						
<b>Quasi-Peak Value</b>						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
<b>Emissions detected are more than 20 dB below the FCC Limits</b>						

**Result of Tx mode connected to PC, (Bluetooth: 2440.0 MHz) (GFSK mode) (Above 1GHz): Pass**

<b>Field Strength of Spurious Emissions</b>						
<b>Peak Value</b>						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dB	E-Field Polarity
4880.0	1.9	42.5	44.4	74.0	29.6	Horizontal
7320.0	2.4	46.3	48.7	74.0	25.3	Horizontal
9760.0	0.7	48.9	49.6	74.0	24.4	Horizontal
12200.0	0.6	52.5	53.1	74.0	20.9	Horizontal

**Result of Tx mode connected to PC, (Bluetooth: 2440.0 MHz) (GFSK mode) (Above 1GHz): Pass**

<b>Field Strength of Spurious Emissions</b>						
<b>Average Value</b>						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dB	E-Field Polarity
4880.0	-7.6	42.5	34.9	54.0	19.1	Horizontal
7320.0	-6.7	46.3	39.6	54.0	14.4	Horizontal
9760.0	-10.3	48.9	38.6	54.0	15.4	Horizontal
12200.0	-11.7	52.5	40.8	54.0	13.2	Horizontal

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**Result of Tx mode connected to PC, (Bluetooth: 2480.0 MHz) (GFSK mode) (9kHz – 30MHz): Pass**

<b>Field Strength of Spurious Emissions</b>						
<b>Peak Value</b>						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
<b>Emissions detected are more than 20 dB below the FCC Limits</b>						

**Results of Tx mode connected to PC, (Bluetooth: 2480.0 MHz) (GFSK mode) (30MHz – 1000MHz): PASS**

<b>Field Strength of Spurious Emissions</b>						
<b>Quasi-Peak Value</b>						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
<b>Emissions detected are more than 20 dB below the FCC Limits</b>						

**Result of Tx mode connected to PC, (Bluetooth: 2480.0 MHz) (GFSK mode) (Above 1GHz): Pass**

<b>Field Strength of Spurious Emissions</b>						
<b>Peak Value</b>						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dB	E-Field Polarity
4960.0	1.9	42.7	44.6	74.0	29.4	Horizontal
7440.0	2.7	46.5	49.2	74.0	24.8	Horizontal
9920.0	0.7	49.7	50.4	74.0	23.6	Horizontal
12400.0	0.4	52.7	53.1	74.0	20.9	Horizontal

**Result of Tx mode connected to PC, (Bluetooth: 2480.0 MHz) (GFSK mode) (Above 1GHz): Pass**

<b>Field Strength of Spurious Emissions</b>						
<b>Average Value</b>						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dB	E-Field Polarity
4960.0	-7.3	42.7	35.4	54.0	18.6	Horizontal
7440.0	-6.1	46.5	40.4	54.0	13.6	Horizontal
9920.0	-10.8	49.7	38.9	54.0	15.1	Horizontal
12400.0	-11.9	52.7	40.8	54.0	13.2	Horizontal

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**Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:**

Frequency Range [MHz]	Quasi-Peak Limits [ $\mu\text{V/m}$ ]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

**Result of Tx mode connected to PC, (9kHz – 30MHz): PASS**

Emissions detected are more than 20 dB below the FCC Limits

**Result of Tx mode connected to PC, (30MHz – 1GHz): PASS**

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level @3m dB $\mu\text{V/m}$	Correction Factor dB $\mu\text{V/m}$	Field Strength dB $\mu\text{V/m}$	Field Strength $\mu\text{V/m}$	Limit @3m $\mu\text{V/m}$	E-Field Polarity
31.1	11.2	15.6	26.8	21.9	100	Vertical
177.7	19.4	10.4	29.8	30.9	150	Horizontal
185.2	19.1	0.4	19.5	9.4	150	Horizontal
228.0	17.1	11.9	29.0	28.2	200	Horizontal
331.0	15.3	0.8	16.1	6.4	200	Horizontal
340.9	11.8	15.4	27.2	22.9	200	Horizontal

**Result of Tx mode with motor, (1GHz – 26GHz): PASS**

Emissions detected are more than 20 dB below the FCC Limits

Remarks:

- \* Denotes restricted band of operation.  
Measurements were made using a peak detector. Any emission less than 1000MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty: (9kHz - 30MHz): 3.3dB  
(30MHz - 1GHz): 4.6dB  
(1GHz - 26GHz): 4.4dB

Emissions in the vertical and horizontal polarizations have been investigated and the worst-case test results are recorded in this report.

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### 3.1.4 Power Spectral Density

Test Requirement: FCC 47CFR 15.247(e)  
Test Method: ANSI C63.10:2013  
Test Date: 2017-12-21  
Mode of Operation: On mode

#### Test Method:

The RF output of the EUT was connected to the spectrum analyzer. Set the fundamental frequency as the center frequency of the spectral analyzer. Use RBW=3kHz , VBW= 10KHz , Set the span to 1.5 times the DTS channel bandwidth. Detector = peak, Sweep time = auto couple , Trace mode = max hold. Measure the Power Spectral Density (PSD) and record the results in dBm.

#### Test Setup:

As Test Setup of clause 3.1.3 in this test report.

#### Test Limit:

The maximum power spectral density (PSD) shall not exceeded 8dBm in any 3kHz band.

#### Result of on mode: Pass

##### Maximum power spectral density

Transmitter Frequency (MHz)	Maximum Power spectral density level / 3kHz band (dBm)	Maximum Power spectral density / 3kHz band limit
2402	-43.0	8dBm
2440	-43.9	8dBm
2480	-42.2	8dBm

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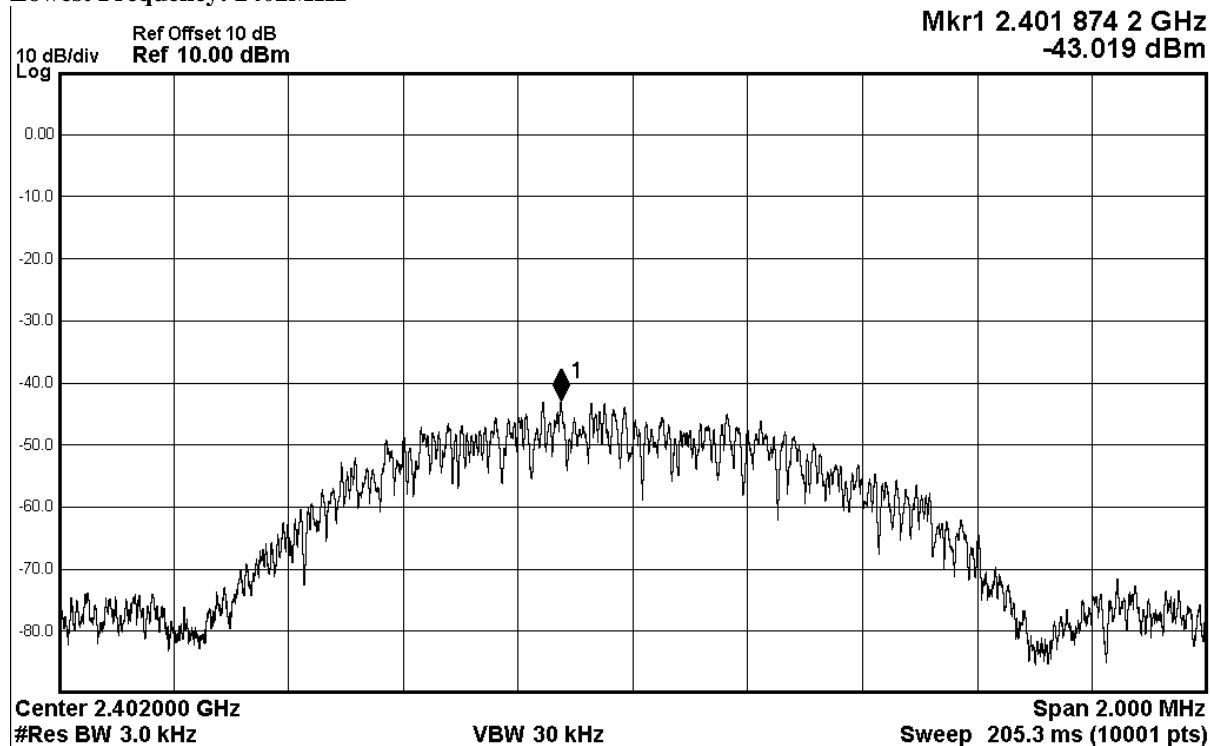


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Lowest Frequency: 2402MHz



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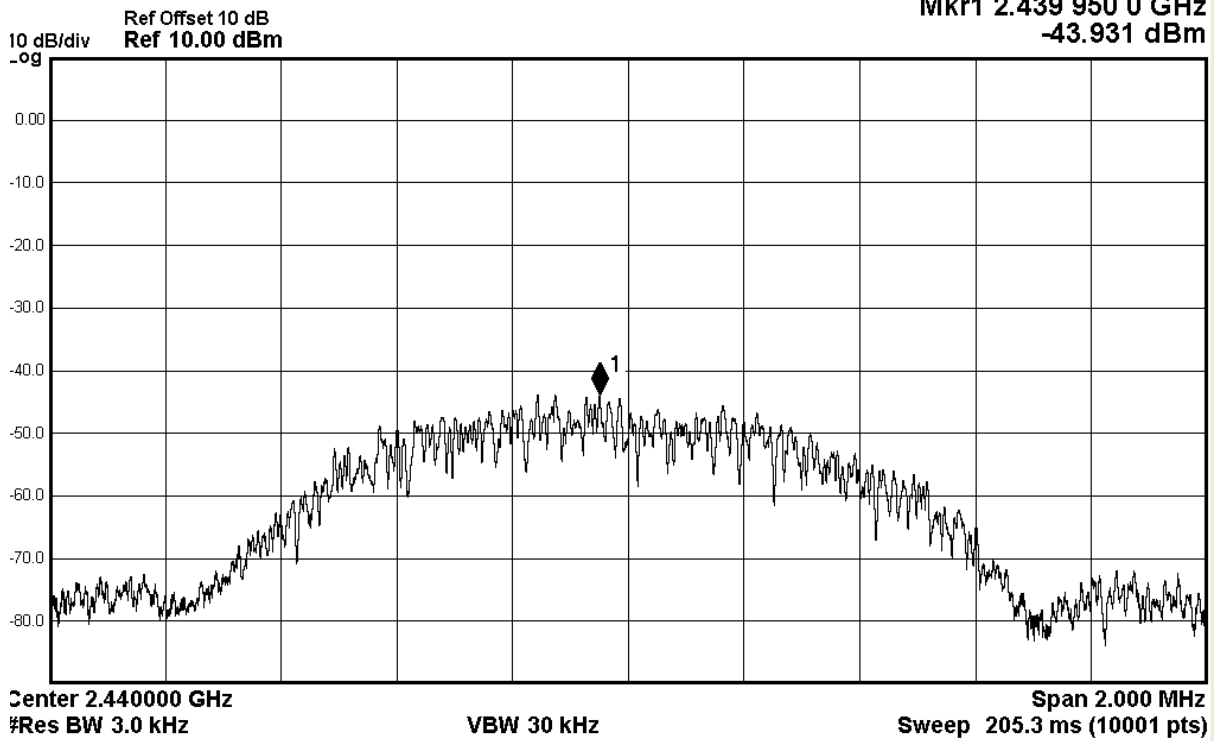


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Middle Frequency: 2440MHz



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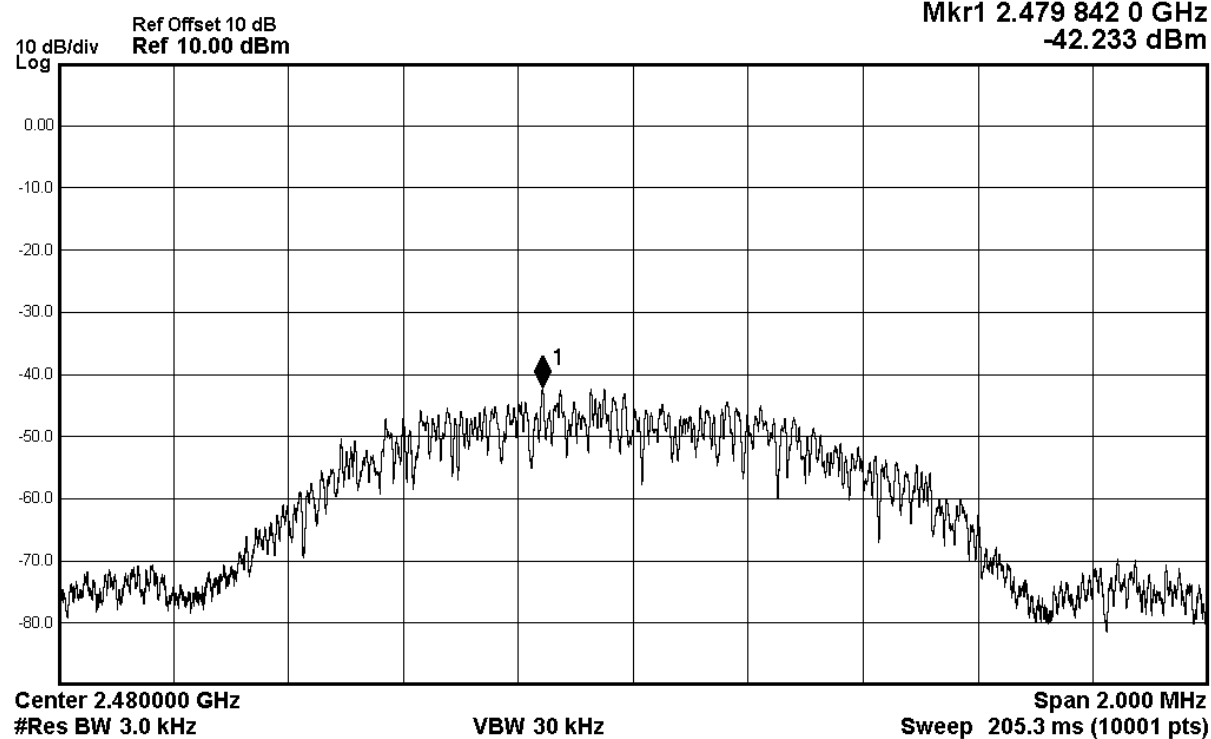


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Highest Frequency: 2480MHz



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### 3.1.5 6dB Bandwidth Measurement

Test Requirement: FCC 47CFR 15.247(a)(2)  
Test Method: ANSI C63.10-2013  
Test Date: 2017-12-28  
Mode of Operation: Tx mode

#### **Remark:**

The result has been done on all the possible configurations for searching the worst cases.

#### **Test Method:**

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

#### **Test Setup:**

As Test Setup of clause 3.1.3 in this test report.

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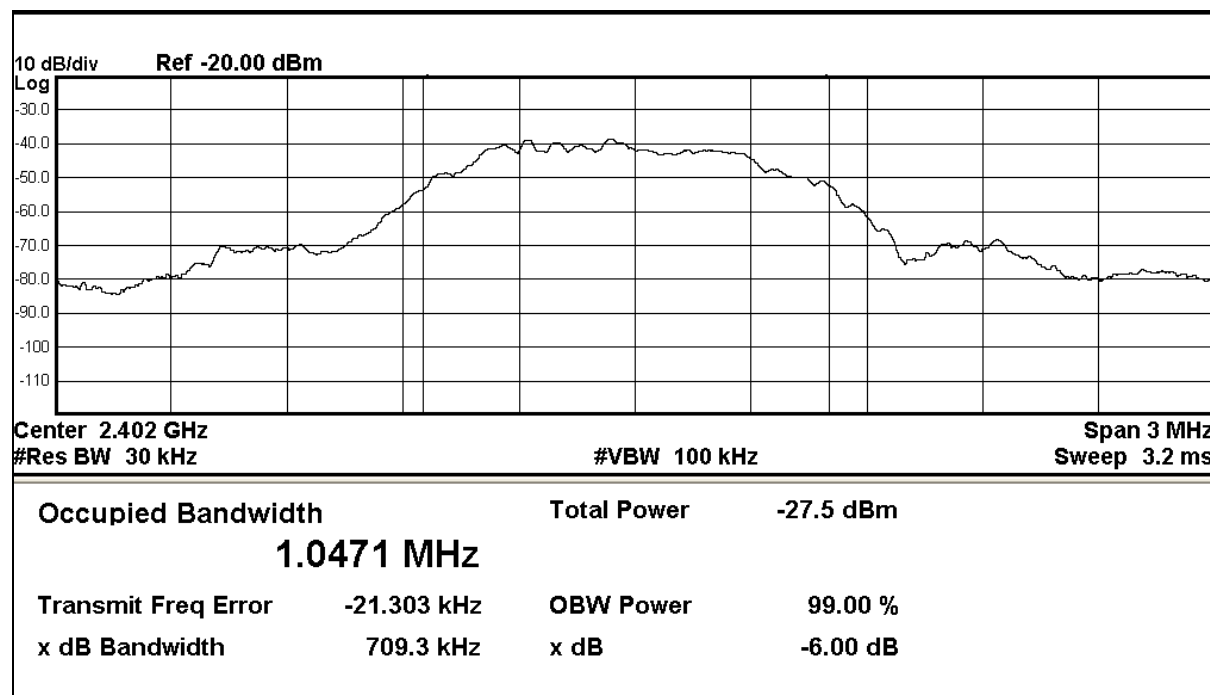
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Fundamental Frequency [MHz]	6dB Bandwidth [kHz]	FCC Limits [kHz]
2402	709.3	>500kHz

**(Lowest Operating Frequency) - (GFSK)**







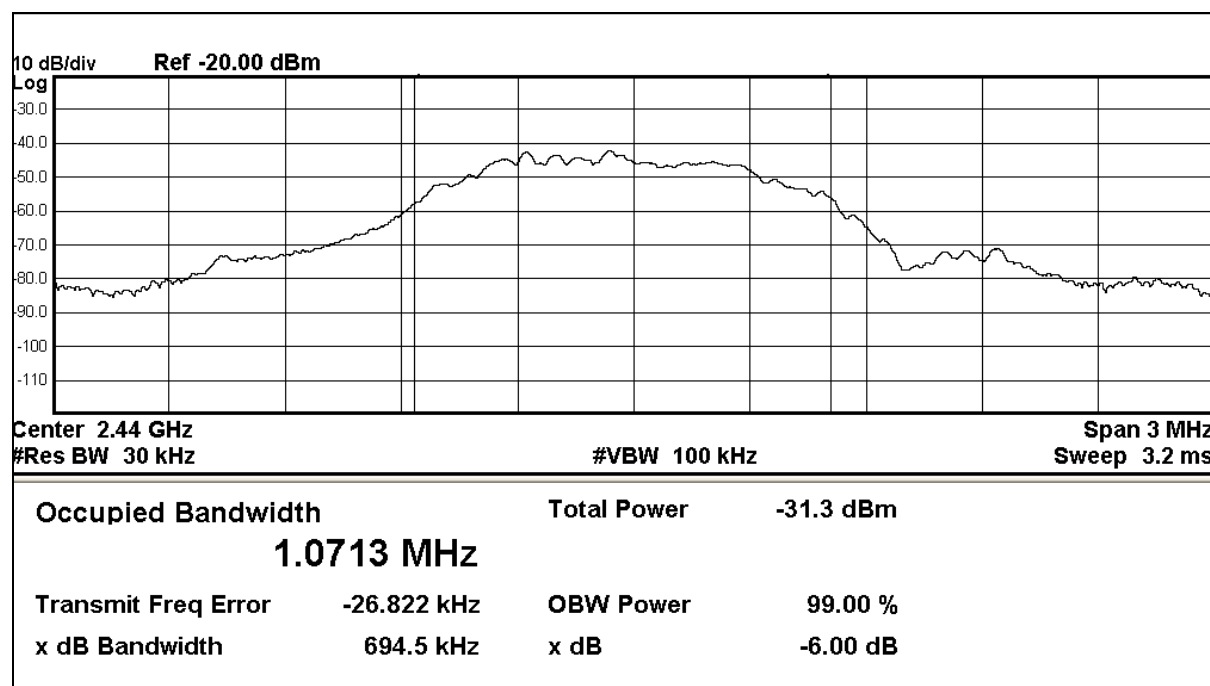
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Fundamental Frequency [MHz]	6dB Bandwidth [kHz]	FCC Limits [kHz]
2440	694.5	>500kHz

(Middle Operating Frequency) - (GFSK)





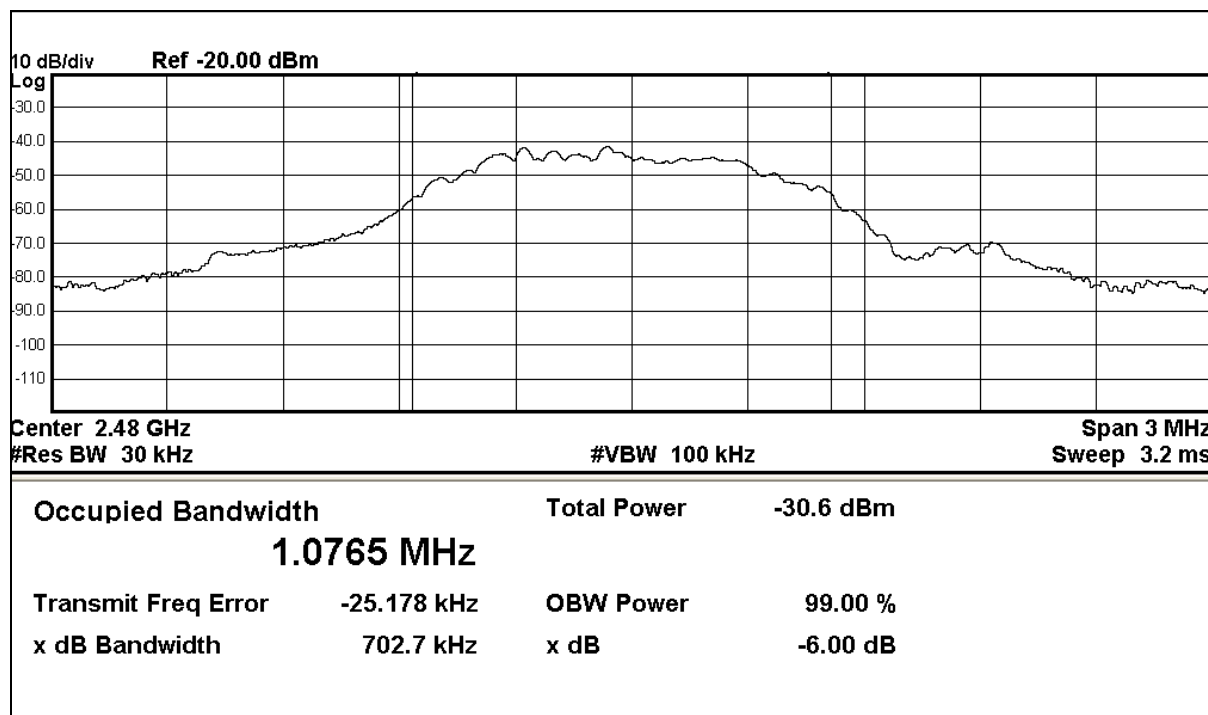
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Fundamental Frequency [MHz]	6dB Bandwidth [kHz]	FCC Limits [kHz]
2480	702.7	>500kHz

**(Highest Operating Frequency) - (GFSK)**





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### 3.1.7 Band-edge Compliance Measurement:

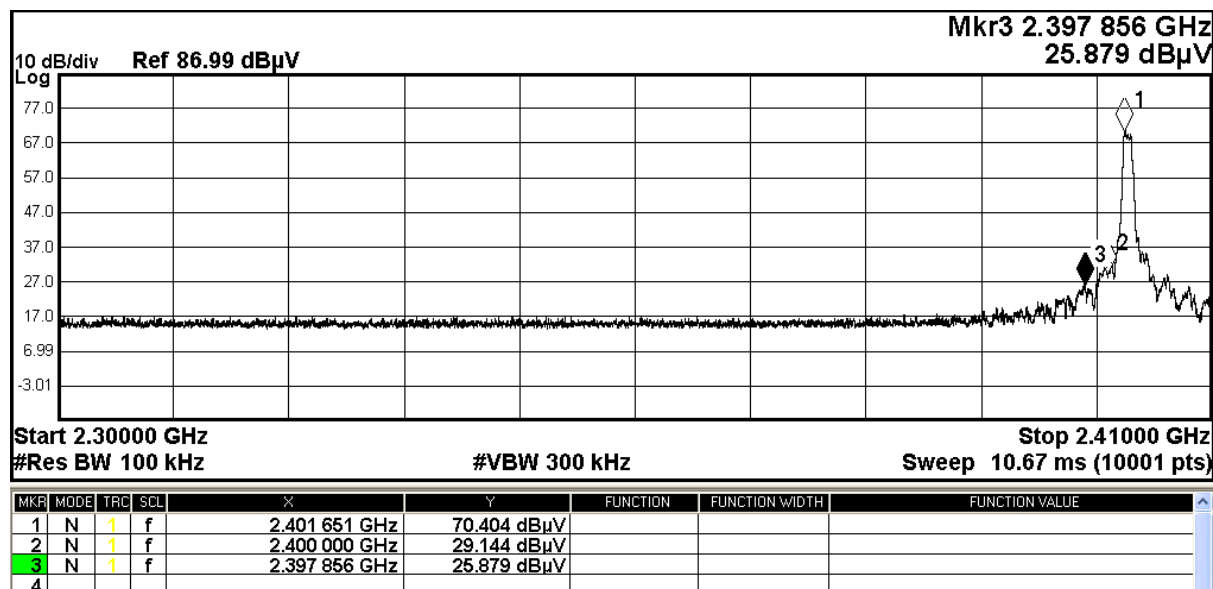
#### Limit :

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required.

### Band-edge Compliance Measurement:

Frequency Range [MHz]	Radiated Emission Attenuated below the Fundamental [dB]
2400 - Lowest Fundamental (2402)	41.3

### Band-edge Compliance Measurement



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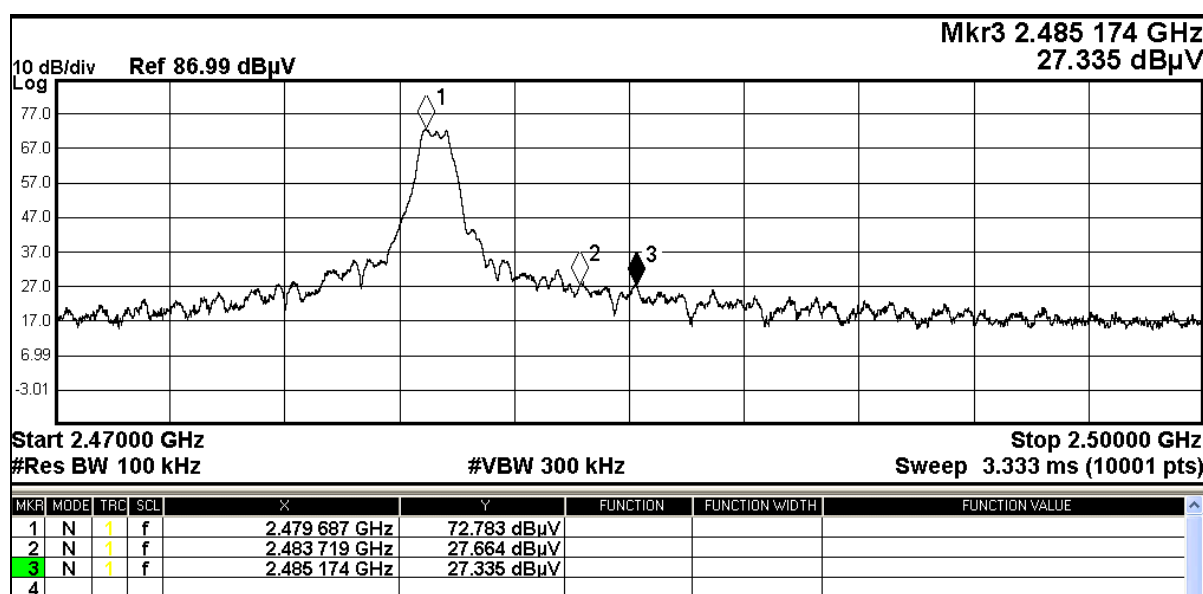
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Band-edge Compliance Measurement:

Frequency Range [MHz]	Radiated Emission Attenuated below the Fundamental [dB]
Highest Fundamental (2480) - 2483.5	45.1

### Band-edge Compliance Measurement



Field Strength of Band-edge Emissions						
Peak Value						
Frequency MHz	Measured Level @3m dBμV/m	Correction Factor dBμV/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
2397.9	7.7	27.8	35.5	59.6	5,000	Horizontal
2484.0	6.9	27.8	34.7	54.3	5,000	Horizontal

Field Strength of Band-edge Emissions						
Average Value						
Frequency MHz	Measured Level @3m dBμV/m	Correction Factor dBμV/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
2397.9	-1.3	27.8	26.5	21.1	500	Horizontal
2484.0	-0.9	27.8	26.9	22.1	500	Horizontal



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### 3.1.8 Requirement

Test Requirements: § 15.203

#### Test Specification:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

#### Test Results:

##### Bluetooth:

This is a Circuit printed dipole line Antenna. There is no external Antenna, the Antenna Gain = 0dBi. User is unable to remove or change the Antenna.

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### 3.1.9 RF Exposure

Test Requirement: FCC 47CFR 15.247(i)  
Test Date: 2017-12-28  
Mode of Operation: On mode

#### Test Method:

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines.

#### Test Results:

The EUT complied with the requirement(s) of this section.  
EUT meets the requirements of these sections as proven through MPE calculation  
The MPE calculation for EUT @ 20cm  
Based on the highest P = 0.65 mW@2442MHz

$$\begin{aligned} P_d &= PG / 4\pi * R^2 = (0.65 \times 1.00) / 12.566 * (20)^2 \\ &= (0.65) / 12.566 \times 400 = 1.223 / 5026.4 \\ &= 0.000129 \text{ mW/cm}^2 \end{aligned}$$

where:

- \*Pd = power density in mW/cm<sup>2</sup>
- \* G = Antenna numeric gain (1.00); Log G = g/10 ( g = 0.0dBi ).
- \* P = Conducted RF power to antenna (0.65mW@2402MHz).
- \* R = Minimum allowable distance.(20 cm)

- \*The power density Pd = 0.000129mW/cm<sup>2</sup> is less than 1 mW/cm<sup>2</sup> (listed MPE limit)
- \*The SAR evaluation is not needed ( this is a desk top device, R> 20 cm )
- \* The EUT( antenna ) must be 0.2 meters away from the General Population.

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### Appendix A

### LIST OF MEASUREMENT EQUIPMENT

#### Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM215	MULTIDEVICE CONTROLLER	EMCO	2090	00024676	N/A	N/A
EM217	ELECTRIC POWERED TURNTABLE	EMCO	2088	00029144	N/A	N/A
EM218	ANECHOIC CHAMBER	ETS-LINDGREN	FACT-3	--	2017/04/24	2018/04/24
EM356	ANTENNA POSITIONING TOWER	ETS-LINDGREN	2171B	00150346	N/A	N/A
EM354	BICONILOG ANTENNA	ETS-LINDGREN	3143B	00142073	2016/02/29	2018/02/29
EM229	EMI TEST RECEIVER	R&S	ESIB40	100248	2017/06/01	2018/06/01
EM299	DOUBLE-RIDGED WAVEGUIDE HORN ANTENNA	ETS-LINDGREN	3115	00114120	2016/04/27	2018/04/27
EM300	PYRAMIDAL STANDARD GAIN HORN ANTENNA	ETS-LINDGREN	3160-09	00130130	2016/05/13	2018/05/13
EM301	PYRAMIDAL STANDARD GAIN HORN ANTENNA	ETS-LINDGREN	3160-10	00130988	2016/05/13	2018/05/13
EM302	PRECISION OMNIDIRECTIONAL DIPOLE (1 – 6GHZ)	SEIBERSDORF LABORATORIES	POD 16	161806/L	2016/05/11	2018/05/11
EM303	PRECISION OMNIDIRECTIONAL DIPOLE (6 – 18GHZ)	SEIBERSDORF LABORATORIES	POD 618	6181908/L	2016/05/11	2018/05/11
EM318	USB WIDEBAND POWER SENSOR	AGILENT	U2022XA	MY53470001	2017/03/23	2018/03/23
EM353	LOOP ANTENNA	ETS_LINDGREN	6502	00206533	2016/03/16	2018/03/16

#### Line Conducted

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM119	LISN	R & S	ESH3-Z5	0831.5518.52	2016/11/29	2018/11/29
EM181	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB7	100072	2017/06/01	2018/06/01
EM179	IMPULSE LIMITER	ROHDE & SCHWARZ	ESH3-Z2	357-8810.52/54	2017/01/11	2018/01/11
EM154	SHIELDING ROOM	SIEMENS MATSUSHITA COMPONENTS	N/A	803-740-057-99A	2017/02/02	2022/02/02
N/A	MEASUREMENT AND EVALUATION SOFTWARE	ROHDE & SCHWARZ	ESIB-K1	V1.20	N/A	N/A

Remarks:-

CM     Corrective Maintenance  
N/A    Not Applicable or Not Available  
TBD    To Be Determined

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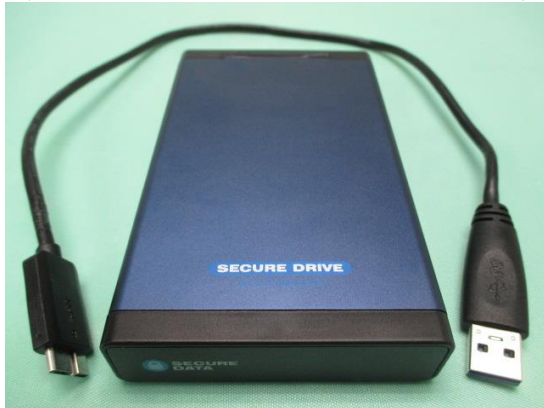
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### Appendix B

#### Photographs of EUT

**Front View of the product**  
(Basic USB Line Model: 189-SDCA01-00LF)



**Rear View of the product**  
(Basic USB Line Model: 189-SDCA01-00LF)



**Front View of the product**  
(Additional USB Line Model: 189-SDK0002-00LF)



**Rear View of the product**  
(Additional USB Line Model: 189-SDK0002-00LF)



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Photographs of EUT

### Inside View of The Product



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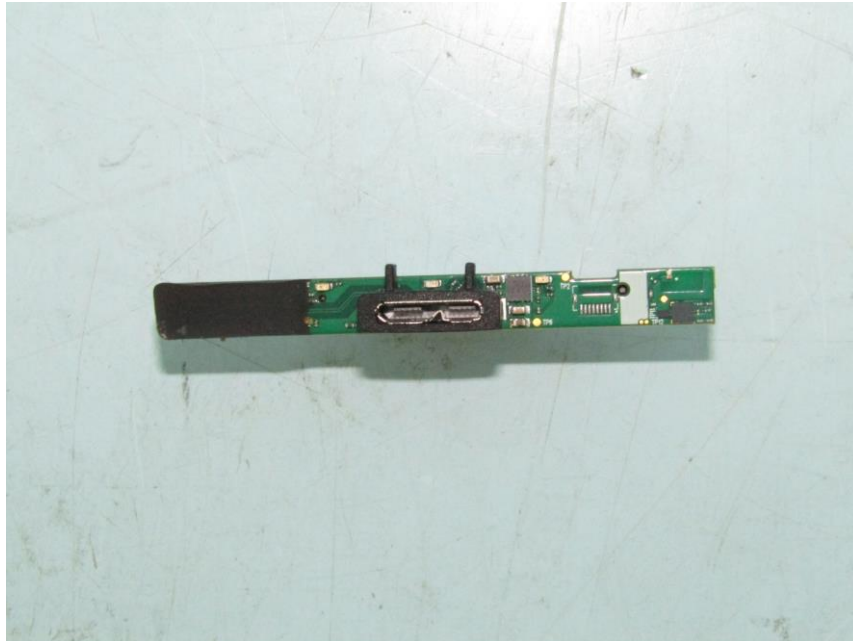
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### Photographs of EUT

**Inner Circuit Top View**



**Inner Circuit Bottom View**



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Tel: +852 2666 1888 Fax: +852 2664 4353 Email: [hkstc@hkstc.org](mailto:hkstc@hkstc.org) Website: [www.stc-group.org](http://www.stc-group.org)

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Photographs of EUT

**Conducted Emission Test Set Up**



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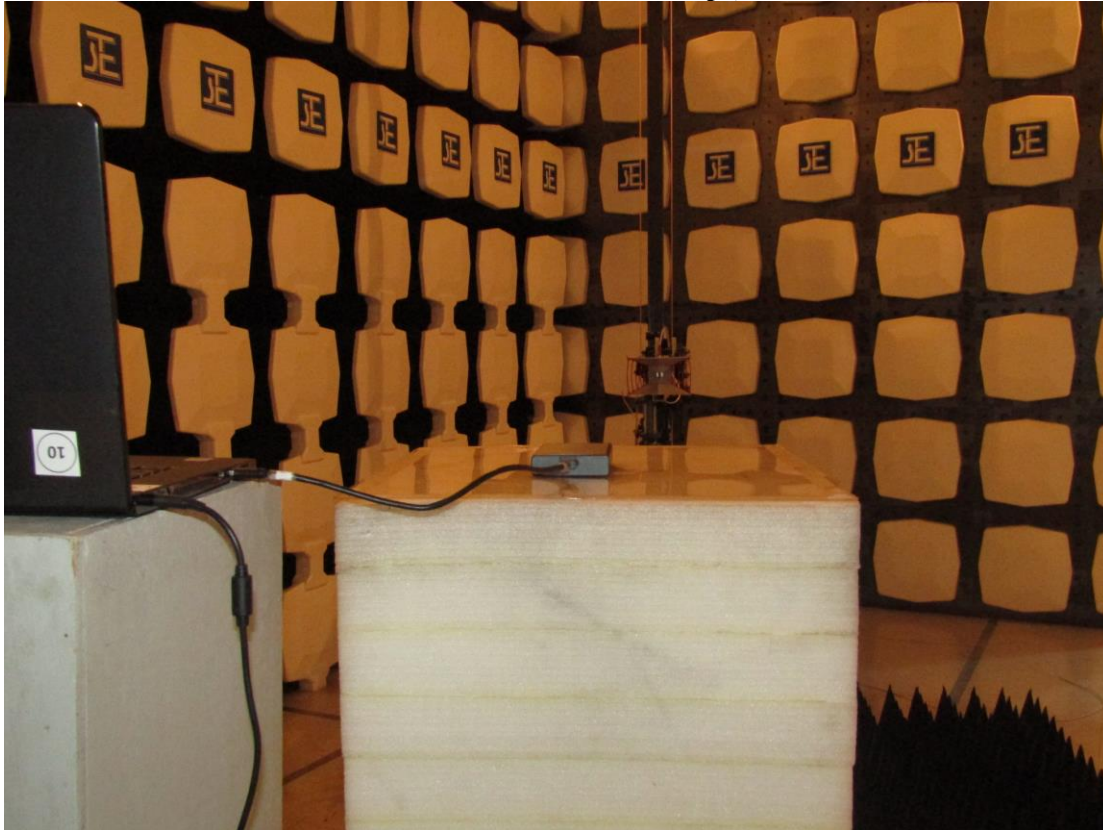
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### Photographs of EUT

Measurement of Radiated Emission Test Set Up (Above 1000MHz)



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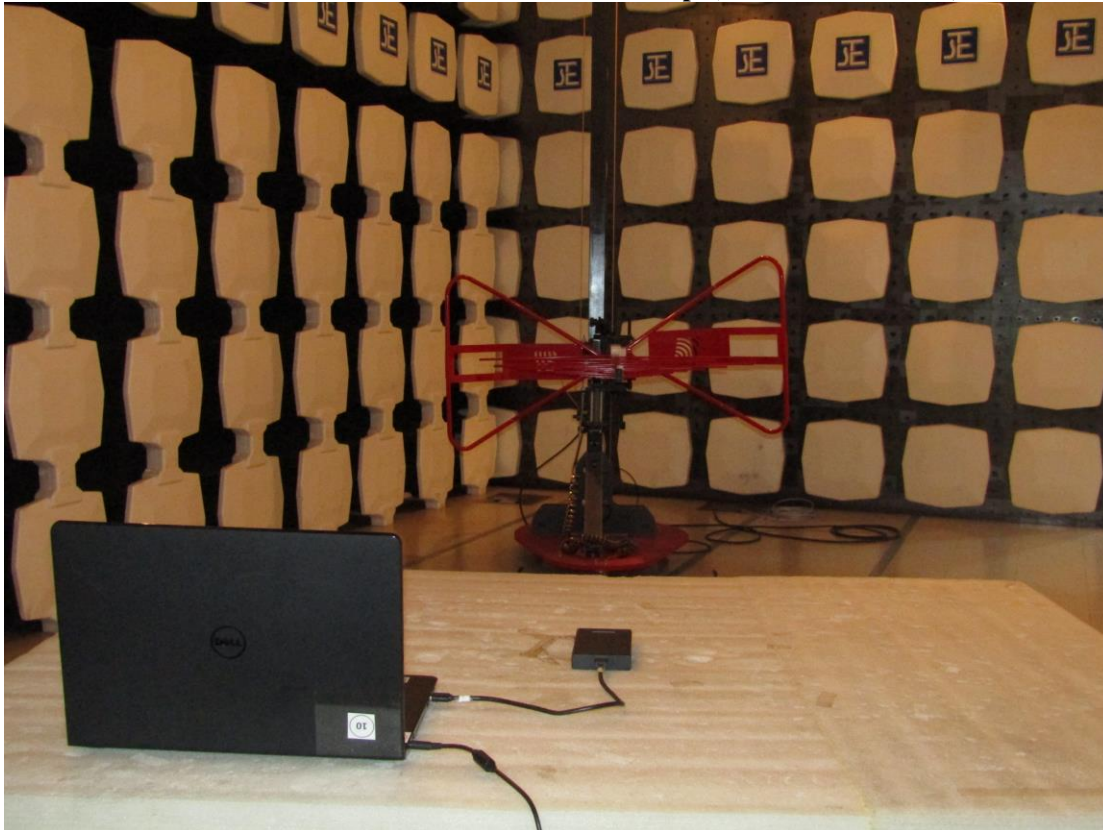
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### Photographs of EUT

#### Measurement of Radiated Emission Test Set Up (30MHz to 1000MHz)



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Tel: +852 2666 1888 Fax: +852 2664 4353 Email: [hkstc@hkstc.org](mailto:hkstc@hkstc.org) Website: [www.stc-group.org](http://www.stc-group.org)

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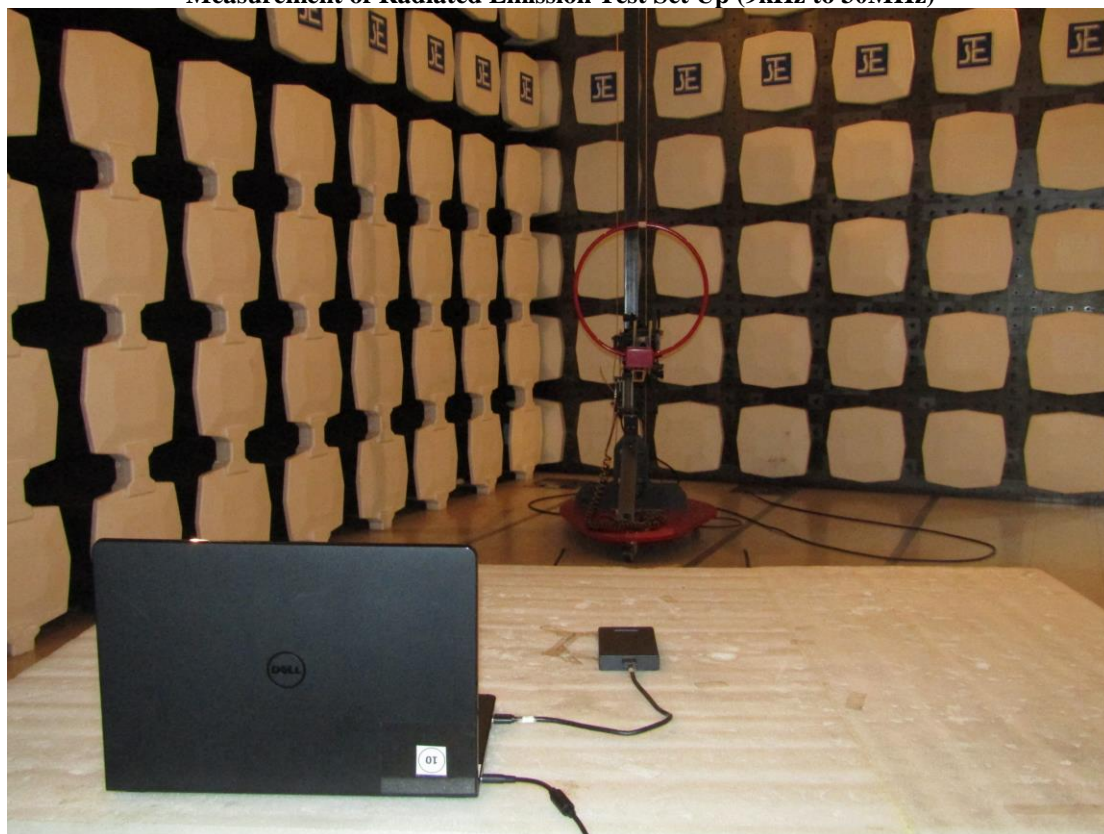
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### Photographs of EUT

Measurement of Radiated Emission Test Set Up (9kHz to 30MHz)



\*\*\*\*\* End of Test Report \*\*\*\*\*

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Tel: +852 2666 1888 Fax: +852 2664 4353 Email: [hkstc@hkstc.org](mailto:hkstc@hkstc.org) Website: [www.stc-group.org](http://www.stc-group.org)

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