TEST REPORT No: (5220)195-1102(A)

TEST REPORT

To:	**JAKKS PACIFIC (HK) LIMITED**	To:	-
Attn:	Dick Au / Mathew Chu / Kin Yiu	Attn:	-
Address:	12/F WHARF T&T CTR, 7 CANTON ROAD, TST	Address:	-
Fax:	--	Fax:	-
E-mail:	JPHK-Prodintg@jakks.com.hk / kakiny@jakks.com.hk	E-mail:	-
Folder No.:	--		

Factory name:	**DONGGUAN L C TECHNOLOGY CO., LTD.**
Location:	--
Product:	Fly Wheels RC Speed Demon Model No.: 65231RX

Sample No:	(5220)195-1102
Date of Receipt:	July 16, 2020
Test date:	July 27, 2020 to August 25, 2020
Test Requested:	FCC Part 15
Test Method:	ANSI C63.10 - 2013
FCC ID:	OTA65231RX

The results given in this report are related to the tested specimen of the described electrical apparatus.

CONCLUSION: The submitted sample was found to <u>COMPLY</u> with requirement of FCC Part 15 Subpart C.

Authorized Signature:

Reviewed by: Kinko Wong	Approved by: Sze Tsz Man
Date: September 25, 2020	Date: September 25, 2020

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TEST REPORT No: (5220)195-1102(A)

Test Result Summary

EMISSION TEST			
Test requirement: FCC Part 15			
Test Condition	Test Method	Test Result	
		Pass	Failed
Radiated Emission Test, 9kHz to 24GHz	ANSI C63.10	☒	☐
Frequency range of Fundamental Emission	ANSI C63.10	☒	☐
20dB Bandwidth of Fundamental Emission	ANSI C63.10	☒	☐
Duty Cycle Correction During 100msec	ANSI C63.10	☒	☐

Report Revision & Sample Re-submit History:

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Location of the test laboratory

Bureau Veritas Hong Kong Limited

Room 03, 6/F, Westin Centre, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

Radiated measurements are investigated and taken pursuant to the procedures of ANSI C63.10 – 2013. Semi-anechoic Chamber are set up for investigation and located at:

LG1/F., HKPC Building, 78 Tat Chee Avenue, Kowloon, Hong Kong

List of measuring equipment

Radiated Emission

EQUIPMENT	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DATE	CAL. DUE DATE
EMI TEST RECEIVER	R&S	ESU40	100190	10-OCT-2019	10-OCT-2020
SEMI-ANECHOIC CHAMBER	FRANKONIA	--	--	20-MAR-2020	20-MAR-2021
BICONICAL ANTENNA	R&S	HK116	100242	7-MAR-2019	7-MAR-2021
LOG-PERIODIC ANTENNA	R&S	HL223	841516/019	6-MAR-2019	6-MAR-2021
ACTIVE LOOP ANTENNA	EMCO	6502	9107-2651	30-OCT-2019	30-OCT-2021
STANDARD GAIN HORN (8.2 – 12.4GHZ)	ETS-LINDGREN	3160-07	00205404	04-SEP-2018	04-SEP-2020
STANDARD GAIN HORN (12.4 – 18GHZ)	ETS-LINDGREN	3160-08	002056363	26-SEP-2018	26-SEP-2020
DOUBLE RIDGED HORN (1 – 8.2GHZ)	ETS-LINDGREN	3117	00094998	30-AUG-2018	30-AUG-2020
STANDARD GAIN HORN (26.5 – 40GHZ)	ETS-LINDGREN	3160-10	00205696	03-OCT-2018	03-OCT-2020
DOUBLE RIDGED HORN (18-26.5GHZ)	ETS-LINDGREN	3116	00109210	05-OCT-2018	05-OCT-2020
MICROWAVE PREAMPLIFIER	COM-POWER CORPORATION	PAM-118A	551091	6-MAR-2020	6-MAR-2021
PREAMPLIFIER (18 -40GHZ WITH CABLE)	A.H. Systems, Inc.	Pam-1840VH	168	30-JAN-2020	30-JAN-2021
COAXIAL CABLE	Huber+Suhner	CNM-NMCMILX800-473	A2803 #0001	04-OCT-2018	04-OCT-2020

Measurement Uncertainty

MEASUREMENT	FREQUENCY	UNCERTAINTY
Radiated emissions	30MHz to 200MHz	±5.2dB
	200MHz to 1GHz	±6.1dB
	1GHz to 8.2GHz	±4.9dB
	8.2GHZ to 12.4GHz	±4.3dB
	12.4GHz to 18GHz	±4.6dB

Remarks:-

N/A : Not Applicable or Not Available
Measurement uncertainty is calculated in accordance with CISPR 16-4-2.
The statement of compliance is based on a 95% coverage probability for the expanded uncertainty of the measurement result using a coverage factor k = 2.
Compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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TEST REPORT No: (5220)195-1102(A)

General Information	
Product:	Fly Wheels RC Speed Demon
Model Number:	65231RX
Data Cable:	--
Power Line Cable:	--
Accessory Device:	--
Additional Product Name:	--
Additional Model Number:	--
Additional Model Information:	--
Adaptor:	--
Model:	--
Input:	--
Input power line cable:	--
Output:	--
Output power line cable:	--
Technical Information	
Rated Voltage:	6Vd.c. (“AA” size battery x 4)
Power supply:	6Vd.c. (“AA” size battery x 4)
Other information:	--
Disclaimer Note: Technical information stated on this table are provided by client. All tests were conducted base on the technical information provided above.	

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TEST REPORT No: (5220)195-1102(A)

Description of EUT Operation:

The Equipment Under Test (EUT) is a **JAKKS PACIFIC (HK) LIMITED** of Remote Control Transmitter. It is a 1 switch transceiver and operating at 2423MHz to 2465MHz. The lowest, middle and highest frequencies were tested and the results are shown in the report. The EUT transmit while buttons is being pressed or sticks are being pushed or pulled, Modulation by IC, and type is GFSK.

There are total 35 channels and below is the frequency list :

2423	2424	2425	2426	2427	2428	2429	2430	2431	2433
2434	2435	2436	2437	2438	2441	2442	2443	2444	2445
2446	2447	2448	2449	2450	2451	2453	2454	2455	2456
2457	2458	2461	2462	2465					

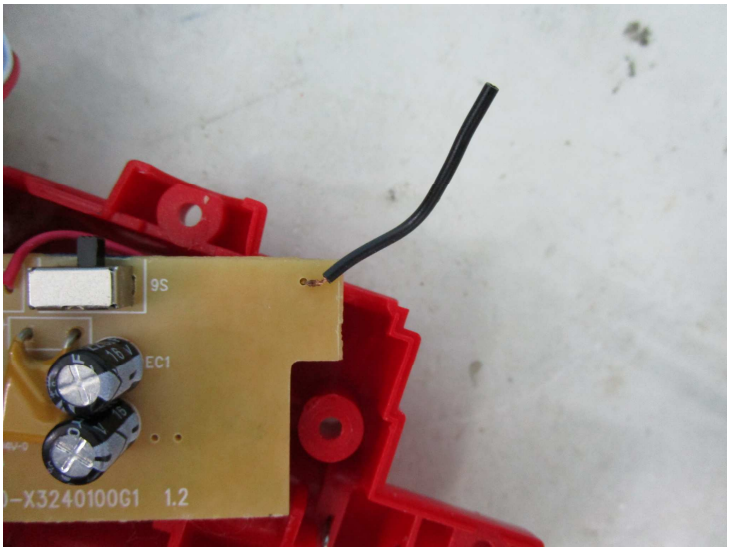
The transmitter has different control:

1. ON/OFF Switch – power control

Antenna Requirement (Section 15.203)

The EUT is use of a permanently antenna. It is soldered on the PCB. The antenna consists of 3cm long wire The antenna is not replaceable or user serviceable. The requirements of S15.203 are met. There are no deviations or exceptions to the specifications.

Photo of Antenna



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Test Results

Radiated Emissions (Fundamental)

Test Requirement:	FCC Part 15 Section 15.249
Test Method:	ANSI C63.10
Test Date(s):	2020-07-27
Temperature:	26.0 °C
Humidity:	55.0 %
Mode of Operation:	Transmission mode
Tested Voltage:	6Vd.c. ("AA" size battery x 4)

Test Procedure:

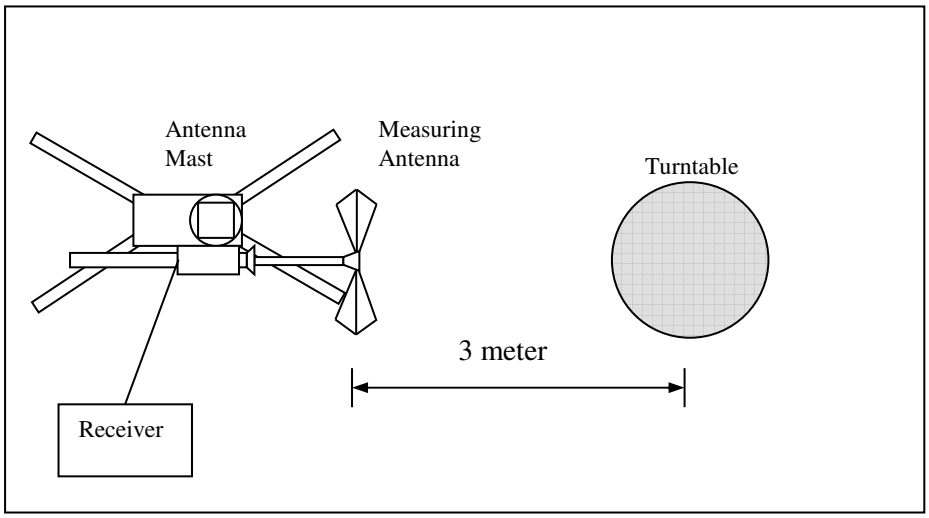
Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.10 – 2013.

The equipment under test (EUT) was placed on a non-conductive turntable with dimensions of 1.5m x 1m and 0.8m high above the ground for measurement frequency below 1GHz and 1.5m high above the ground for measurement frequency above 1GHz. 3m from the EUT, a broadband antenna mounting on the mast received the signal strength. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using new battery. The turntable was rotated to maximize the emission level. The antenna was then moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated.

For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.

Location: Hong Kong Productivity Council – Electromagnetic Compatibility Centre

Test Setup: Semi-anechoic chamber



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Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission (Average) [mV/m]	Field Strength of Harmonics Emission (Average) [µV/m]
2400-2483.5	50	500

Measurement Data

Test Result of (Transmission mode, Lowest frequency): PASS

Frequency (MHz)	Polarity (H/V)	Correction Factor (dB/m)	Duty-cycle correction (dB)	Field Strength at 3m – Peak (dBµV/m)	Limit at 3m – Peak (dBµV/m)	Margin - Peak (dB)	**Field Strength at 3m – Average (dBµV/m)	Limit at 3m – Average (dBµV/m)	Margin - Average (dB)
2422.93	H	-4.3	-21.8	92.3	114.0	-21.7	70.5	94.0	-23.5
2422.93	V	-4.3	-21.8	91.3	114.0	-22.7	69.5	94.0	-24.5

Test Result of (Transmission mode, Middle frequency): PASS

Frequency (MHz)	Polarity (H/V)	Correction Factor (dB/m)	Duty-cycle correction (dB)	Field Strength at 3m – Peak (dBµV/m)	Limit at 3m – Peak (dBµV/m)	Margin - Peak (dB)	**Field Strength at 3m – Average (dBµV/m)	Limit at 3m – Average (dBµV/m)	Margin - Average (dB)
2442.99	H	-4.3	-21.8	84.5	114.0	-29.5	62.7	94.0	-31.3
2442.99	V	-4.3	-21.8	90.2	114.0	-23.8	68.4	94.0	-25.6

Test Result of (Transmission mode, Highest frequency): PASS

Frequency (MHz)	Polarity (H/V)	Correction Factor (dB/m)	Duty-cycle correction (dB)	Field Strength at 3m – Peak (dBµV/m)	Limit at 3m – Peak (dBµV/m)	Margin - Peak (dB)	**Field Strength at 3m – Average (dBµV/m)	Limit at 3m – Average (dBµV/m)	Margin - Average (dB)
2464.73	H	-4.3	-21.8	88.8	114.0	-25.2	67.0	94.0	-27.0
2464.73	H	-4.3	-21.8	86.5	114.0	-27.5	64.7	94.0	-29.3

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.
**Duty Cycle Correction = 20Log(0.08112) = -21.8dB.

Note: Field Strength = Receiver Reading + Correction Factor
Correction Factor = Antenna Factor + Cable Loss – Preamplifier Gain
Margin = Field Strength - Limit
Receiver setting: RBW = 1MHz
VBW = 1MHz

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TEST REPORT No: (5220)195-1102(A)

Radiated Emissions (Spurious Emission)

Test Requirement: FCC Part 15 Section 15.249
Test Method: ANSI C63.10

Test Date(s): 2020-07-27
Temperature: 26.0 °C
Humidity: 55.0 %
Mode of Operation: Transmission mode
Tested Voltage: 6Vd.c. ("AA" size battery x 4)

Measurement Data

Test Result of (Transmission mode, Lowest frequency): PASS

Frequency (MHz)	Polarity (H/V)	Correction Factor (dB/m)	Duty-cycle correction (dB)	Field Strength at 3m – Peak (dBμV/m)	Limit at 3m – Peak (dBμV/m)	Margin - Peak (dB)	**Field Strength at 3m – Average (dBμV/m)	Limit at 3m – Average (dBμV/m)	Margin - Average (dB)
2400.00	H	-4.3	-21.8	44.7	74.0	-29.3	22.9	54.0	-31.1
4845.86	H	-1.0	-21.8	51.9	74.0	-22.1	30.1	54.0	-23.9
7268.79	H	1.5	-21.8	49.6	74.0	-24.4	27.8	54.0	-26.2
9691.72	H	3.0	-21.8	50.3	74.0	-23.7	28.5	54.0	-25.5
12114.65	H	4.6	-21.8	52.0	74.0	-22.0	30.2	54.0	-23.8
14537.58	H	6.3	-21.8	56.4	74.0	-17.6	34.6	54.0	-19.4
16960.51	H	9.0	-21.8	55.1	74.0	-18.9	33.3	54.0	-20.7
19383.44	H	14.3	-21.8	47.0	74.0	-27.0	25.2	54.0	-28.8
21806.37	H	14.8	-21.8	46.5	74.0	-27.5	24.7	54.0	-29.3
24229.30	H	17.8	-21.8	48.3	74.0	-25.7	26.5	54.0	-27.5

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.
**Duty Cycle Correction = 20Log(0.08112) = -21.8dB.

Note: Field Strength = Receiver Reading + Correction Factor
Correction Factor = Antenna Factor + Cable Loss – Preamplifier Gain
Margin = Field Strength - Limit
Receiver setting: RBW = 1MHz
VBW = 1MHz

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Measurement Data

Test Result of (Transmission mode, Lowest frequency): PASS

Frequency (MHz)	Polarity (H/V)	Correction Factor (dB/m)	Duty-cycle correction (dB)	Field Strength at 3m – Peak (dBµV/m)	Limit at 3m – Peak (dBµV/m)	Margin - Peak (dB)	**Field Strength at 3m – Average (dBµV/m)	Limit at 3m – Average (dBµV/m)	Margin - Average (dB)
2400.00	V	-4.3	-21.8	46.4	74.0	-27.6	24.6	54.0	-29.4
4845.86	V	-1.0	-21.8	52.2	74.0	-21.8	30.4	54.0	-23.6
7268.79	V	1.5	-21.8	48.6	74.0	-25.4	26.8	54.0	-27.2
9691.72	V	3.0	-21.8	50.7	74.0	-23.3	28.9	54.0	-25.1
12114.65	V	4.6	-21.8	52.0	74.0	-22.0	30.2	54.0	-23.8
14537.58	V	6.3	-21.8	56.4	74.0	-17.6	34.6	54.0	-19.4
16960.51	V	9.0	-21.8	55.1	74.0	-18.9	33.3	54.0	-20.7
19383.44	V	14.3	-21.8	47.0	74.0	-27.0	25.2	54.0	-28.8
21806.37	V	14.8	-21.8	46.5	74.0	-27.5	24.7	54.0	-29.3
24229.30	V	17.8	-21.8	48.3	74.0	-25.7	26.5	54.0	-27.5

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.
**Duty Cycle Correction = 20Log(0.08112) = -21.8dB

Note: Field Strength = Receiver Reading + Correction Factor
Correction Factor = Antenna Factor + Cable Loss – Preamplifier Gain
Margin = Field Strength - Limit
Receiver setting: RBW = 1MHz
VBW = 1MHz

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Measurement Data
Test Result of (Transmission mode, Middle frequency): PASS

Frequency (MHz)	Polarity (H/V)	Correction Factor (dB/m)	Duty-cycle correction (dB)	Field Strength at 3m – Peak (dBµV/m)	Limit at 3m – Peak (dBµV/m)	Margin - Peak (dB)	**Field Strength at 3m – Average (dBµV/m)	Limit at 3m – Average (dBµV/m)	Margin - Average (dB)
4885.99	H	-1.0	-21.8	51.7	74.0	-22.3	29.9	54.0	-24.1
7328.99	H	1.5	-21.8	47.6	74.0	-26.4	25.8	54.0	-28.2
9771.20	H	2.2	-21.8	45.9	74.0	-28.1	24.1	54.0	-29.9
12214.98	H	4.6	-21.8	46.0	74.0	-28.0	24.2	54.0	-29.8
14657.80	H	6.3	-21.8	55.5	74.0	-18.5	33.7	54.0	-20.3
17100.98	H	9.0	-21.8	55.1	74.0	-18.9	33.3	54.0	-20.7
19543.97	H	14.3	-21.8	47.0	74.0	-27.0	25.2	54.0	-28.8
21986.97	H	14.8	-21.8	47.5	74.0	-26.5	25.7	54.0	-28.3
24429.97	H	18.8	-21.8	48.3	74.0	-25.7	26.5	54.0	-27.5

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.
**Duty Cycle Correction = 20Log(0.08112) = -21.8dB

Note: Field Strength = Receiver Reading + Correction Factor
Correction Factor = Antenna Factor + Cable Loss – Preamplifier Gain
Margin = Field Strength - Limit
Receiver setting: RBW = 1MHz
VBW = 1MHz

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TEST REPORT No: (5220)195-1102(A)

Measurement Data
Test Result of (Transmission mode, Middle frequency): PASS

Frequency (MHz)	Polarity (H/V)	Correction Factor (dB/m)	Duty-cycle correction (dB)	Field Strength at 3m – Peak (dBμV/m)	Limit at 3m – Peak (dBμV/m)	Margin - Peak (dB)	**Field Strength at 3m – Average (dBμV/m)	Limit at 3m – Average (dBμV/m)	Margin - Average (dB)
4885.99	V	-1.0	-21.8	52.6	74.0	-21.4	30.8	54.0	-23.2
7328.99	V	1.5	-21.8	47.4	74.0	-26.6	25.6	54.0	-28.4
9771.20	V	2.2	-21.8	45.5	74.0	-28.5	23.7	54.0	-30.3
12214.98	V	4.4	-21.8	45.8	74.0	-28.2	24.0	54.0	-30.0
14657.80	V	9.0	-21.8	54.6	74.0	-19.4	32.8	54.0	-21.2
17100.98	V	9.4	-21.8	55.7	74.0	-18.3	33.9	54.0	-20.1
19543.97	V	14.3	-21.8	46.2	74.0	-27.8	24.4	54.0	-29.6
21986.97	V	14.8	-21.8	46.5	74.0	-27.5	24.7	54.0	-29.3
24429.97	V	18.8	-21.8	48.3	74.0	-25.7	26.5	54.0	-27.5

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.
**Duty Cycle Correction = 20Log(0.08112) = -21.8dB

Note: Field Strength = Receiver Reading + Correction Factor
Correction Factor = Antenna Factor + Cable Loss – Preamplifier Gain
Margin = Field Strength - Limit
Receiver setting: RBW = 1MHz
VBW = 1MHz

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TEST REPORT No: (5220)195-1102(A)

Measurement Data
Test Result of (Transmission mode, Highest frequency): PASS

Frequency (MHz)	Polarity (H/V)	Correction Factor (dB/m)	Duty-cycle correction (dB)	Field Strength at 3m – Peak (dBμV/m)	Limit at 3m – Peak (dBμV/m)	Margin - Peak (dB)	**Field Strength at 3m – Average (dBμV/m)	Limit at 3m – Average (dBμV/m)	Margin - Average (dB)
2483.50	H	-4.3	-21.8	44.7	74.0	-29.3	22.9	54.0	-31.1
4929.85	H	-1.0	-21.8	52.4	74.0	-21.6	30.6	54.0	-23.4
7394.77	H	1.5	-21.8	44.8	74.0	-29.2	23.0	54.0	-31.0
9859.70	H	2.2	-21.8	45.6	74.0	-28.4	23.8	54.0	-30.2
12324.62	H	4.4	-21.8	46.5	74.0	-27.5	24.7	54.0	-29.3
14789.54	H	9.0	-21.8	56.4	74.0	-17.6	34.6	54.0	-19.4
17254.46	H	9.4	-21.8	55.1	74.0	-18.9	33.3	54.0	-20.7
19719.38	H	14.3	-21.8	47.0	74.0	-27.0	25.2	54.0	-28.8
22184.31	H	14.8	-21.8	46.5	74.0	-27.5	24.7	54.0	-29.3
24649.23	H	18.8	-21.8	48.3	74.0	-25.7	26.5	54.0	-27.5

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.
**Duty Cycle Correction = 20Log(0.08112) = -21.8dB

Note: Field Strength = Receiver Reading + Correction Factor
Correction Factor = Antenna Factor + Cable Loss – Preamplifier Gain
Margin = Field Strength - Limit
Receiver setting: RBW = 1MHz
VBW = 1MHz

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TEST REPORT No: (5220)195-1102(A)

Measurement Data
Test Result of (Transmission mode, Highest frequency): PASS

Frequency (MHz)	Polarity (H/V)	Correction Factor (dB/m)	Duty-cycle correction (dB)	Field Strength at 3m – Peak (dBμV/m)	Limit at 3m – Peak (dBμV/m)	Margin - Peak (dB)	**Field Strength at 3m – Average (dBμV/m)	Limit at 3m – Average (dBμV/m)	Margin - Average (dB)
2483.50	V	-4.3	-21.8	44.2	74.0	-29.8	22.4	54.0	-31.6
4929.85	V	-1.0	-21.8	52.1	74.0	-21.9	30.3	54.0	-23.7
7394.77	V	1.5	-21.8	47.5	74.0	-26.5	25.7	54.0	-28.3
9859.70	V	2.2	-21.8	45.3	74.0	-28.7	23.5	54.0	-30.5
12324.62	V	4.4	-21.8	46.1	74.0	-27.9	24.3	54.0	-29.7
14789.54	V	9.0	-21.8	56.1	74.0	-17.9	34.3	54.0	-19.7
17254.46	V	9.4	-21.8	54.3	74.0	-19.7	32.5	54.0	-21.5
19719.38	V	14.3	-21.8	47.0	74.0	-27.0	25.2	54.0	-28.8
22184.31	V	14.8	-21.8	46.5	74.0	-27.5	24.7	54.0	-29.3
24649.23	V	18.8	-21.8	48.3	74.0	-25.7	26.5	54.0	-27.5

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.
**Duty Cycle Correction = 20Log(0.08112) = -21.8dB

Note: Field Strength = Receiver Reading + Correction Factor
Correction Factor = Antenna Factor + Cable Loss – Preamplifier Gain
Margin = Field Strength - Limit
Receiver setting: RBW = 1MHz
VBW = 1MHz

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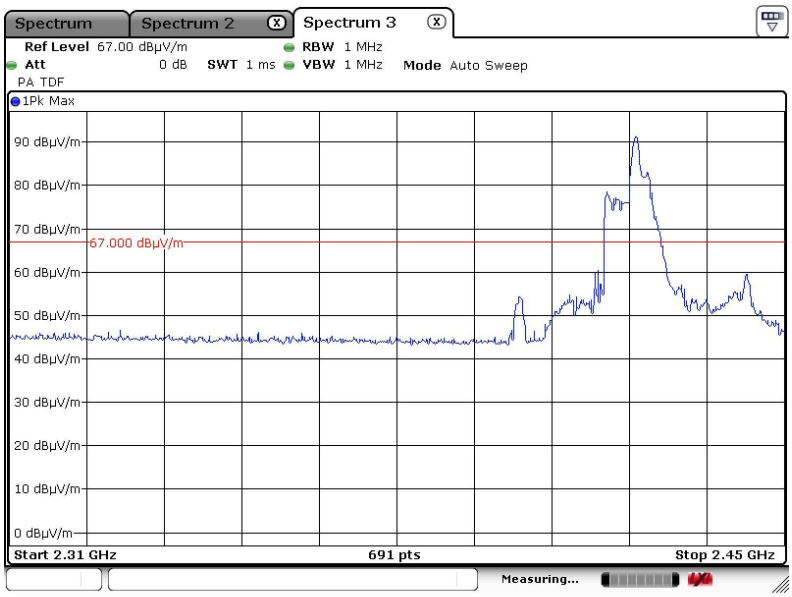
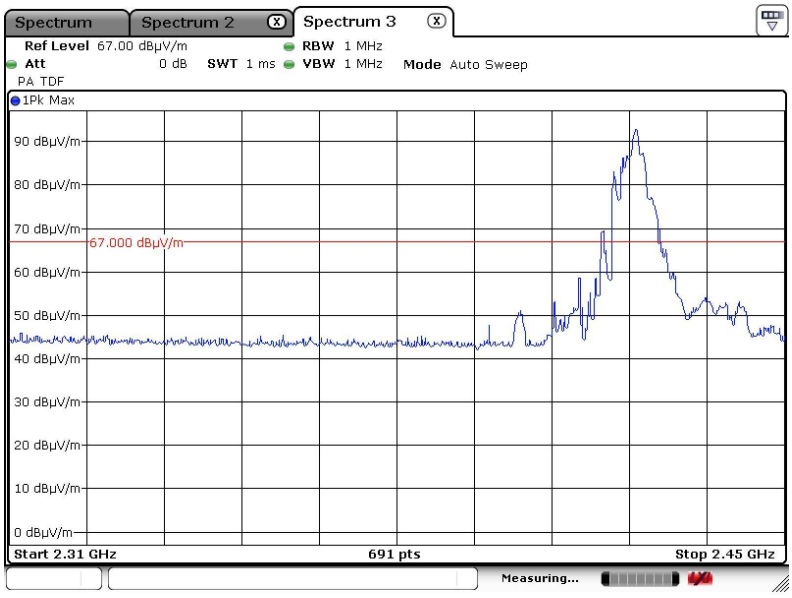
TEST REPORT No: (5220)195-1102(A)

Measurement Data

Test Plot of (Band edge, Lowest frequency, Horizontal): PASS



Test Plot of (Band edge, Lowest frequency, Vertical): PASS



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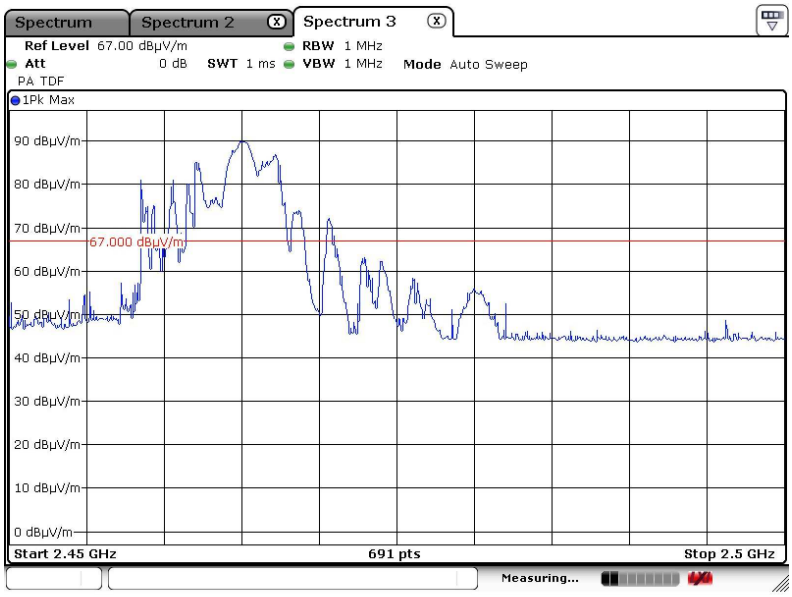
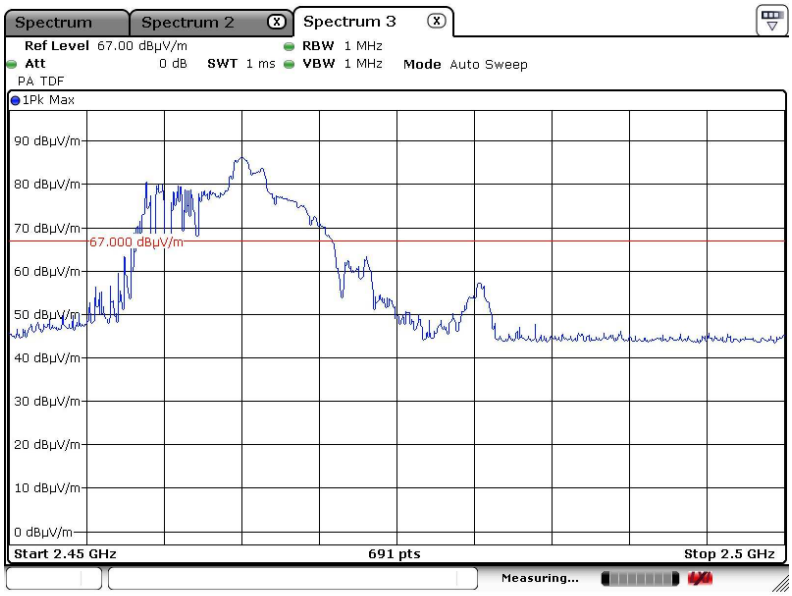
TEST REPORT No: (5220)195-1102(A)

Measurement Data

Test Plot of (Band edge, Highest frequency, Horizontal): PASS



Test Plot of (Band edge, Highest frequency, Vertical): PASS



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TEST REPORT No: (5220)195-1102(A)

Radiated Emissions (30MHz – 2.4GHz)

Test Requirement: FCC Part 15 Section 15.209
Test Method: ANSI C63.10

Test Date(s): 2020-07-29
Temperature: 26.0 °C
Humidity: 57.0 %
Mode of Operation: On mode
Tested Voltage: 6Vd.c. ("AA" size battery x 4)

Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [μV/m]	Measurement Distance m
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above960	500	3

Measurement Data

Test Result of (On mode): PASS

Detection mode: Quasi-Peak

Frequency	Polarity (H/V)	Antenna Factor & Cable Loss (dB/m)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Emissions detected are more than 20 dB below the limit line(s) in 9kHz to 30MHz					

Note: Field Strength = Receiver Reading + Antenna Factor + Cable Loss
Margin = Field Strength - Limit
Receiver setting: RBW = 200Hz
VBW = 200Hz

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TEST REPORT No: (5220)195-1102(A)

Measurement Data

Test Result of (On mode): PASS

Detection mode: Quasi-Peak

Frequency (MHz)	Polarity (H/V)	Antenna Factor & Cable Loss (dB/m)	Field Strength at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
63.99	H	8.8	8.6	40.0	-31.4
113.19	H	11.1	11.7	43.5	-31.8
165.36	H	13.9	15.4	43.5	-28.1
248.54	H	12.3	12.7	46.0	-33.3
342.68	H	15.3	15.9	46.0	-30.1
601.97	H	20.8	31.2	46.0	-14.8

Frequency (MHz)	Polarity (H/V)	Antenna Factor & Cable Loss (dB/m)	Field Strength at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
36.15	V	11.3	10.9	40.0	-29.1
60.33	V	8.8	8.5	40.0	-31.5
188.52	V	22.7	12.9	43.5	-30.6
336.47	V	15.3	15.4	46.0	-30.6
463.91	V	18.5	19.3	46.0	-26.7
885.50	V	24.5	25.4	46.0	-20.6

Note: Field Strength = Receiver Reading + Antenna Factor + Cable Loss
Margin = Field Strength - Limit

Receiver setting: RBW = 120KHz
VBW = 120KHz

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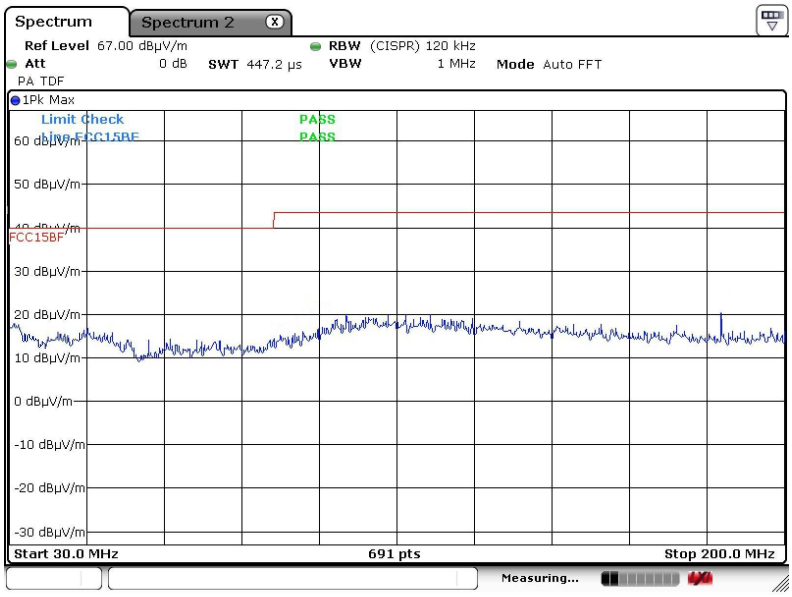
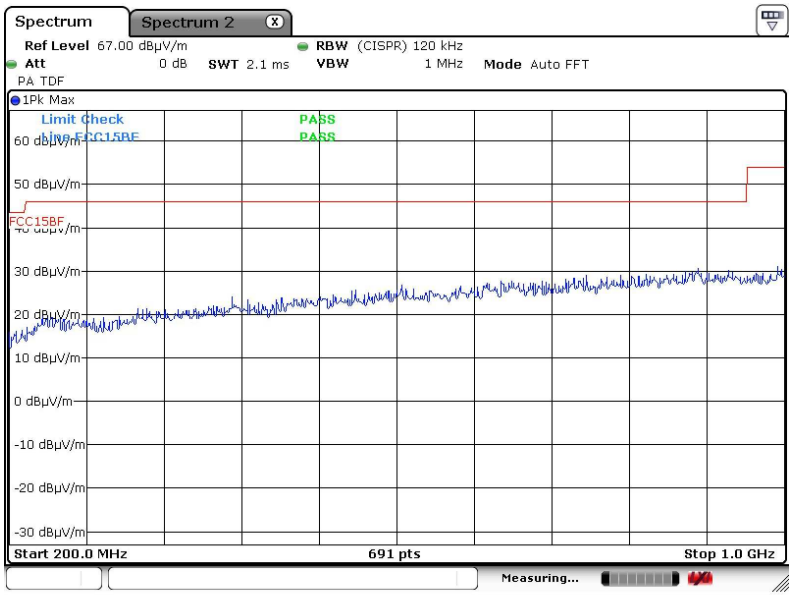
TEST REPORT No: (5220)195-1102(A)

Measurement Data

Test Plot of (On mode, Horizontal): PASS





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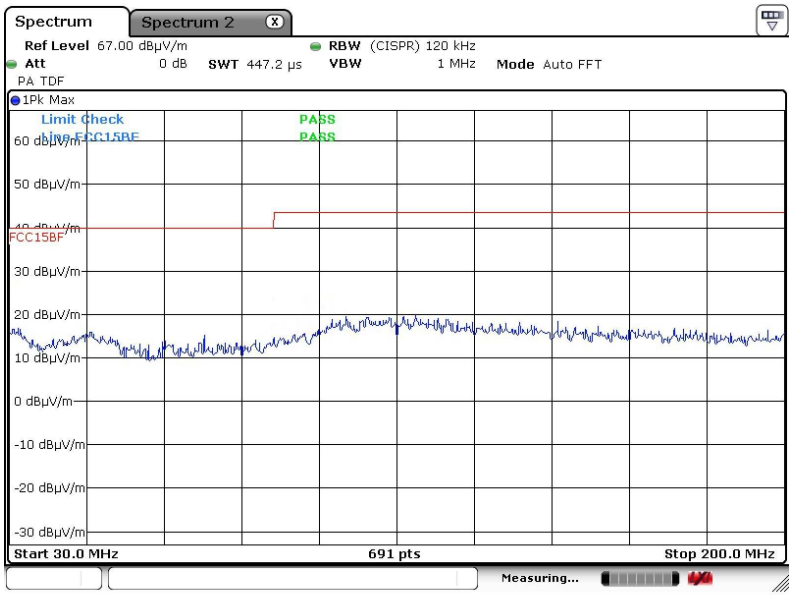
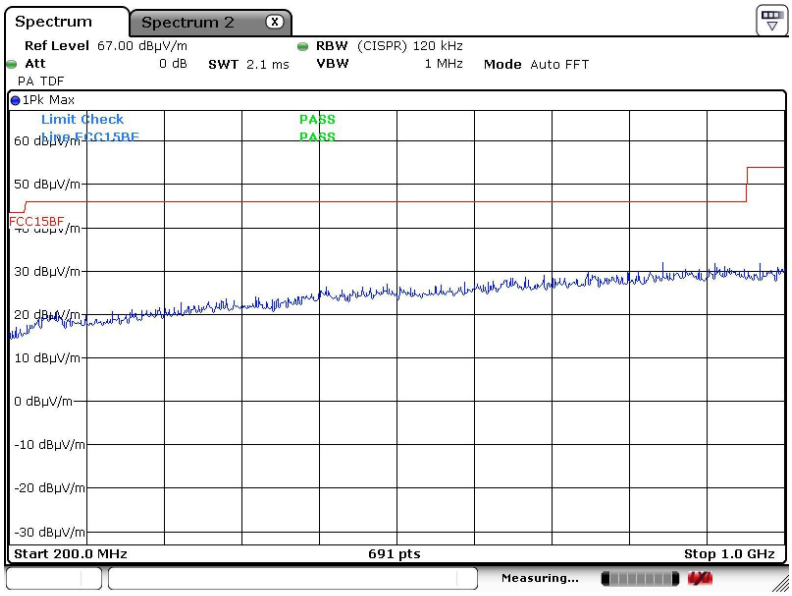
TEST REPORT No: (5220)195-1102(A)

Measurement Data

Test Plot of (On mode, Vertical): PASS





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TEST REPORT No: (5220)195-1102(A)

Frequency range of Fundamental Emission

Test Requirement:	FCC 47 CFR 15.249
Test Method:	ANSI C63.10 Clause 6.10
Test Date(s):	2020-07-31
Temperature:	26.0 °C
Humidity:	57.0 %
Mode of Operation:	Transmission mode
Tested Voltage:	6Vd.c. ("AA" size battery x 4)

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.

Limits for Frequency range of Fundamental Emission:

Frequency [MHz]	FCC Limits [MHz]
2423.00 – 2465.00	2400 – 2483.5

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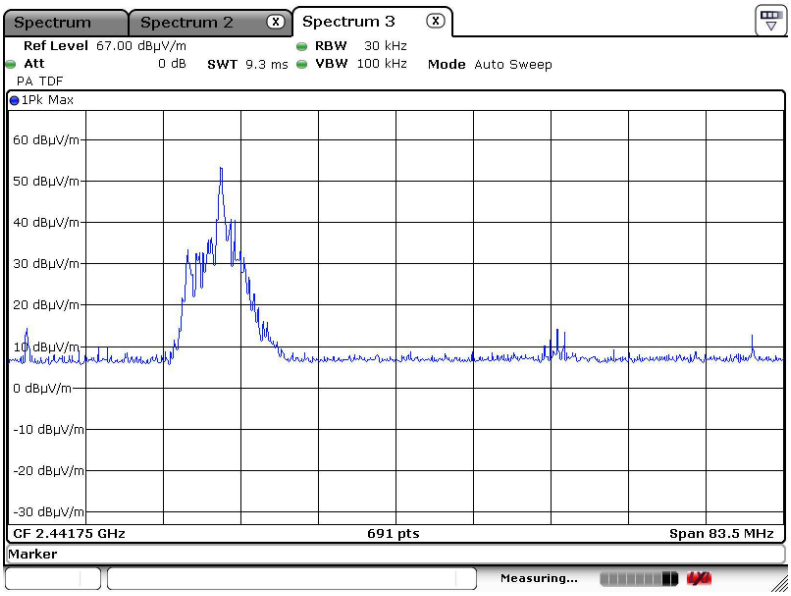
TEST REPORT No: (5220)195-1102(A)

Measurement Data :

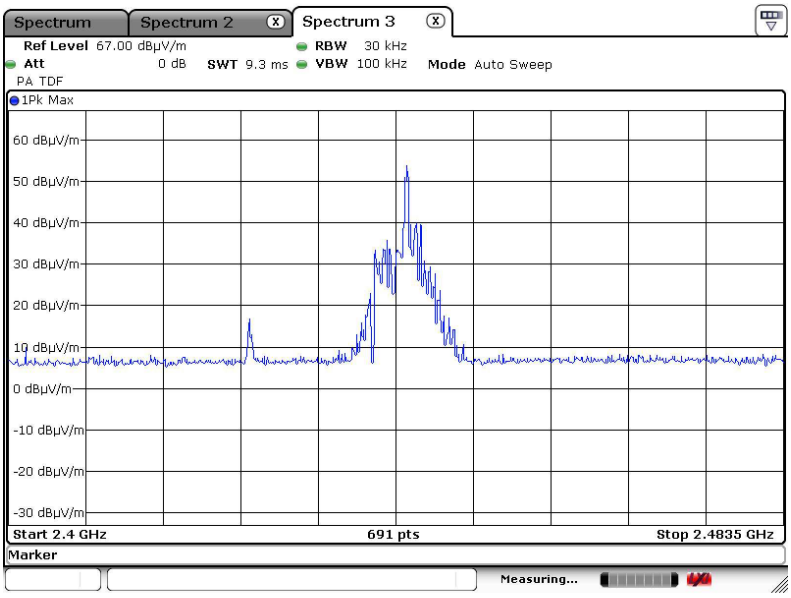
Test Result of Frequency Range of Fundamental Emission: PASS

Lowest Frequency – 2423.00MHz



Date: 31.JUL.2020 15:41:37

Middle Frequency – 2443.00MHz



Date: 31.JUL.2020 16:00:16

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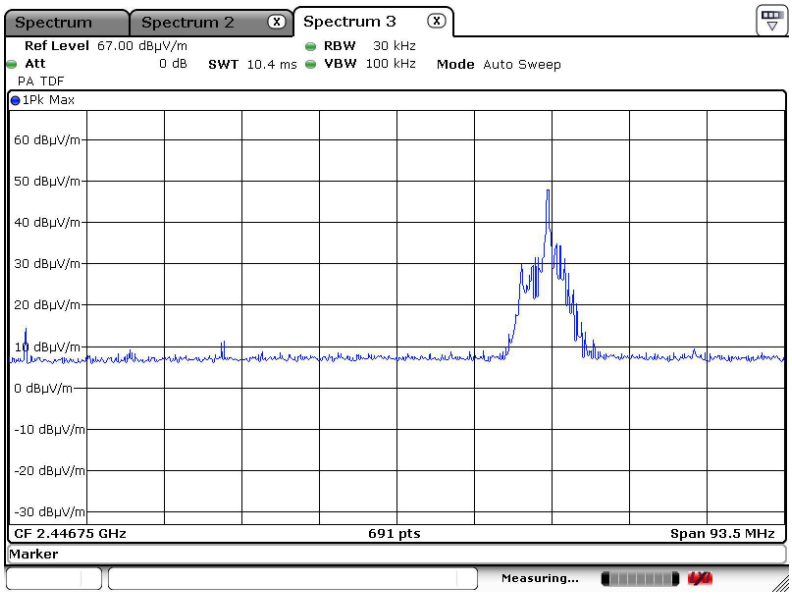
TEST REPORT No: (5220)195-1102(A)

Highest Frequency – 2465.00 MHz



Date: 31.JUL.2020 15:53:27

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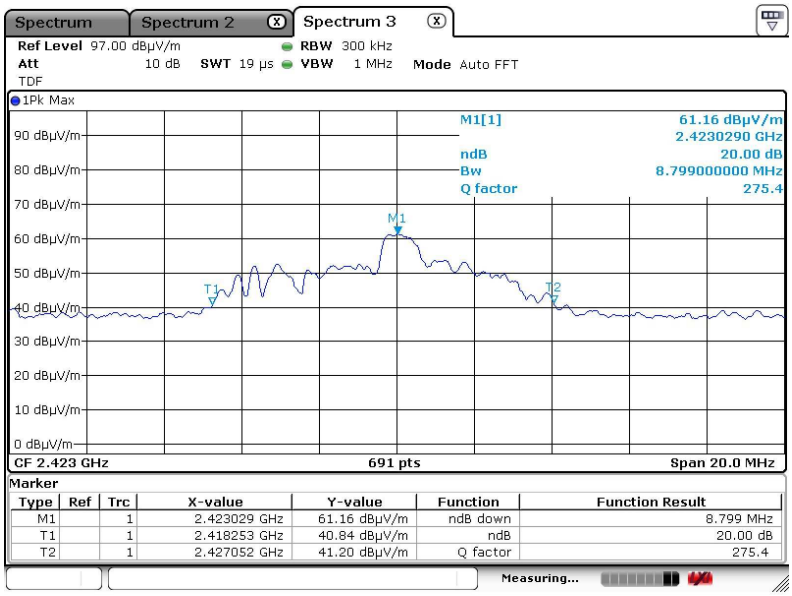
TEST REPORT No: (5220)195-1102(A)

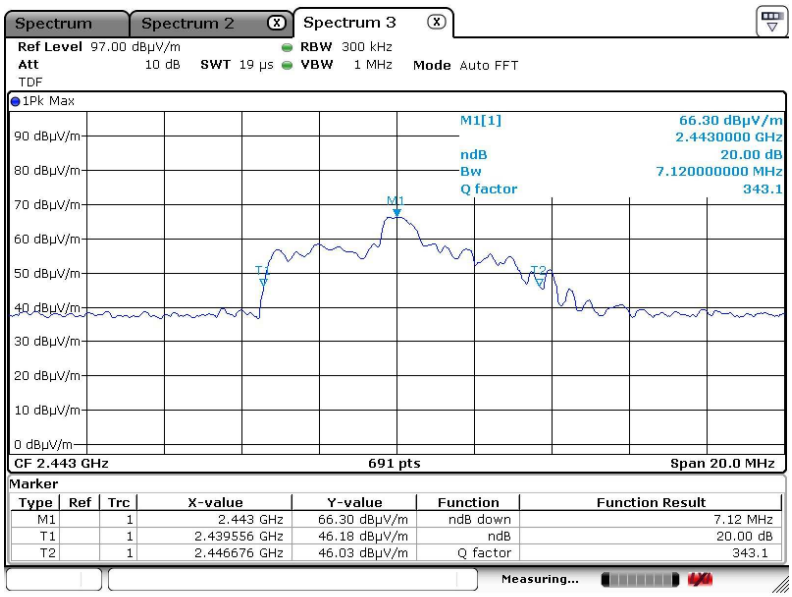
Measurement Data:

Test Result of 20dB Bandwidth of Fundamental Emission: PASS

Lowest Frequency – 2423.00MHz



Middle Frequency – 2443.00MHz



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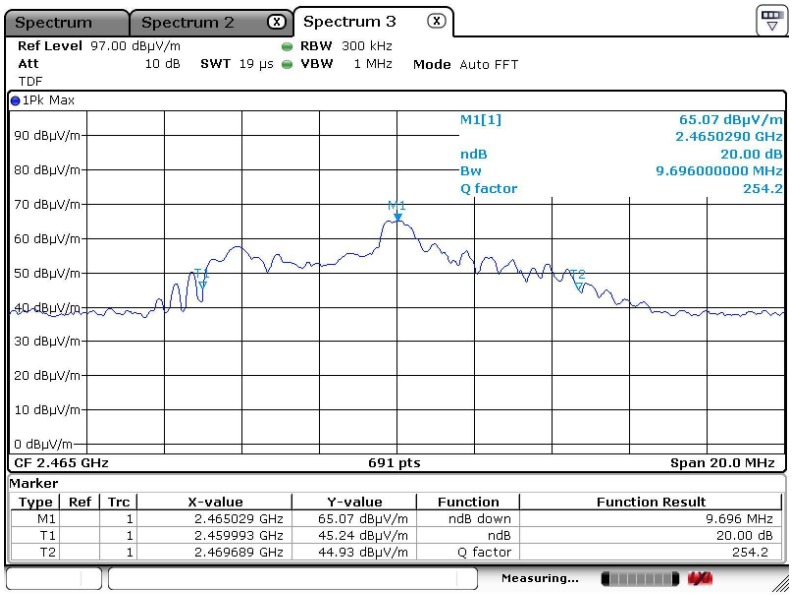
TEST REPORT No: (5220)195-1102(A)

Highest Frequency – 2465.00MHz



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Duty Cycle Correction During 100msec:

Each function key sends a different series of characters, but each packet period (100msec) never exceeds a series of 8 pulses (1.014msec). Assuming any combination of short and long pulses maybe obtained due to encoding the worst case transmit duty cycle would be considered 1.014 x 8 per 100msec = 8.112% duty cycle.

Remarks:

Duty Cycle Correction = 20Log(0.08112) = -21.8dB

The following figures [Figure A] show the characteristics of the pulse train for one of these functions.

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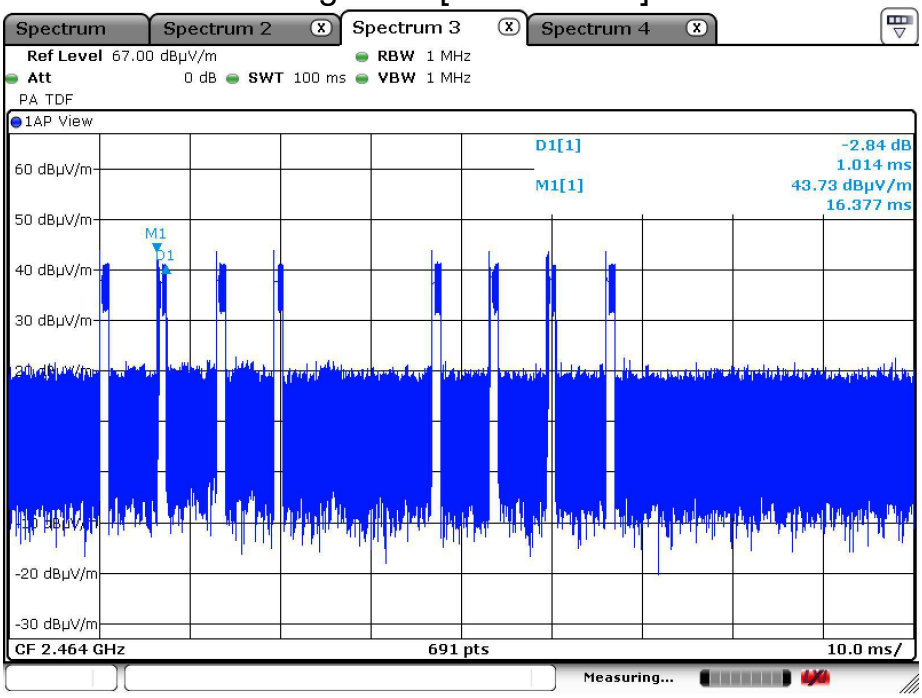
TEST REPORT No: (5220)195-1102(A)

Measurement Data :

Figure A [Pulse Train]



Date: 31.JUL.2020 16:42:57

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TEST REPORT No: (5220)195-1102(A)

Photographs of EUT

Front View of the product

Rear View of the product

Top View of the product

Bottom View of the product

Side View of the product

Side View of the product

Battery compartment

Battery Cover

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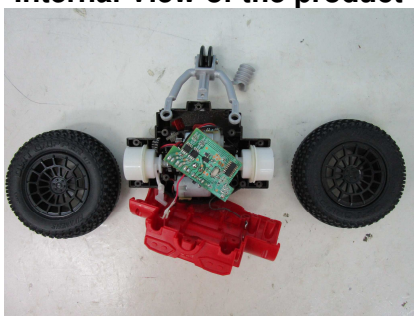
Photographs of EUT

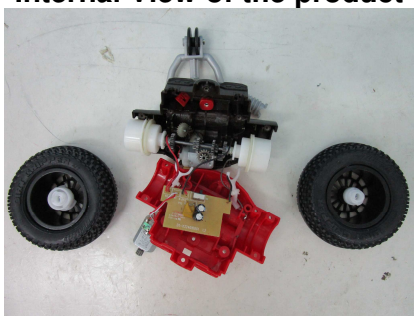
Battery compartment

Battery Cover

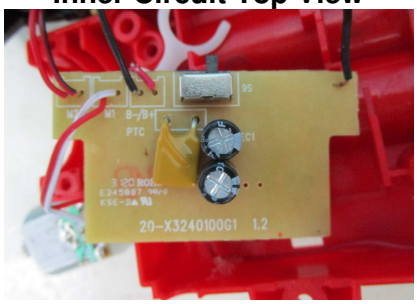
Internal View of the product



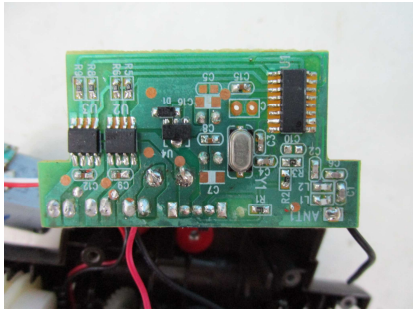
Internal View of the product



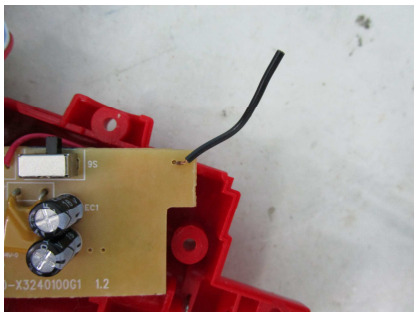
Inner Circuit Top View



Inner Circuit Bottom View



Antenna



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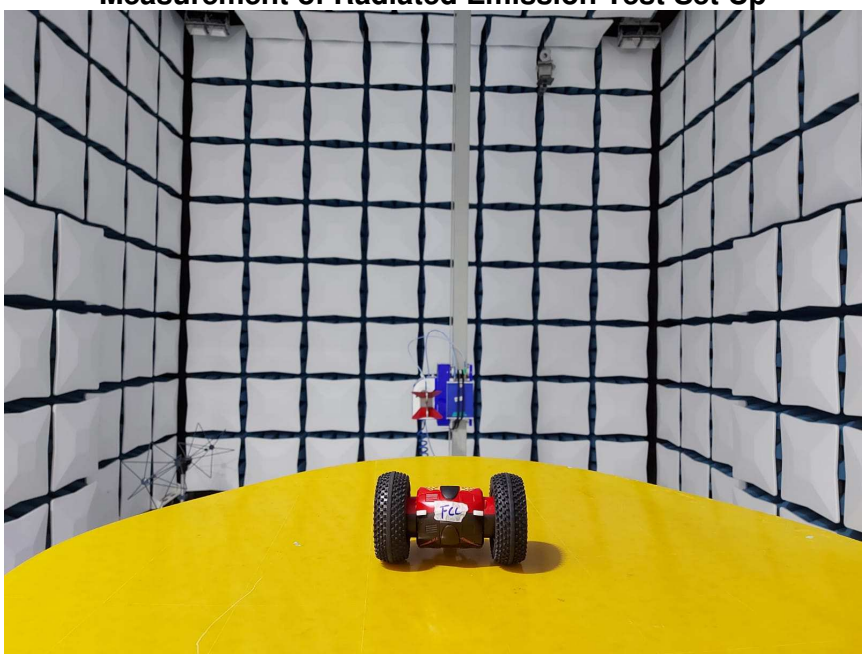
Measurement of Radiated Emission Test Set Up



******* End of Report *******

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