



**BUREAU
VERITAS**

TEST REPORT No: (5220)312-0008(A)

TEST REPORT

To:	INTERNATIONAL TOY	To:	-
Attn:	Travis Prickett	Attn:	-
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Folder No.:			--

Factory name:	EVERWIN TOYS (DONGGUAN) CO. LTD
Location:	No. 150, Xiekeng Road, Xiekeng Village, Qingxi Town, Dongguan City, Guangdong, China
Product:	DS20 DO FEAT AF Model No.: 020S420U025

	Sample No:	(5220)312-0008
	Date of Receipt:	November 11, 2020
	Test date:	November 24, 2020
	Test Requested:	FCC Part 15
	Test Method:	ANSI C63.10 - 2013
	FCC ID:	2ACU8INT106

The results given in this report are related to the tested specimen of the described electrical apparatus.
CONCLUSION: The submitted sample was found to COMPLY with requirement of FCC Part 15 Subpart C.

Authorized Signature:	
Reviewed by: Kinko Wong	Approved by: Sze Tsz Man
Date: December 18, 2020	Date: December 18, 2020

BUREAU VERITAS HONG KONG LIMITED –
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TEST REPORT No: (5220)312-0008(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	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Frequency range of Fundamental Emission	ANSI C63.10	<input checked="" type="checkbox"/>	<input type="checkbox"/>
20dB Bandwidth of Fundamental Emission	ANSI C63.10	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Duty Cycle Correction During 100msec	ANSI C63.10	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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-2020	10-OCT-2021
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-2020	04-SEP-2022
STANDARD GAIN HORN (12.4 – 18GHZ)	ETS-LINDGREN	3160-08	002056363	26-SEP-2020	26-SEP-2022
DOUBLE RIDGED HORN (1 – 8.2GHZ)	ETS-LINDGREN	3117	00094998	30-AUG-2020	30-AUG-2022
STANDARD GAIN HORN (26.5 – 40GHZ)	ETS-LINDGREN	3160-10	00205696	03-OCT-2020	03-OCT-2022
DOUBLE RIDGED HORN (18-26.5GHZ)	ETS-LINDGREN	3116	00109210	05-OCT-2020	05-OCT-2022
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-2020	04-OCT-2022

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.



TEST REPORT No: (5220)312-0008(A)

General Information	
Product:	DS20 DO FEAT AF
Model Number:	020S420U025
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:	3Vd.c. ("AAA" size battery x 2)
Power supply:	3Vd.c. ("AAA" size battery x 2)
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.	

TEST REPORT No: (5220)312-0008(A)

Description of EUT Operation:

The Equipment Under Test (EUT) is a **INTERNATIONAL TOY** of Remote Control Transmitter. It is a 1 switch and 7 buttons transmitter and operating at 2419MHz to 2474MHz. 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 6 channels and below is the frequency list :

2419	2425	2445	2450	2470	2474
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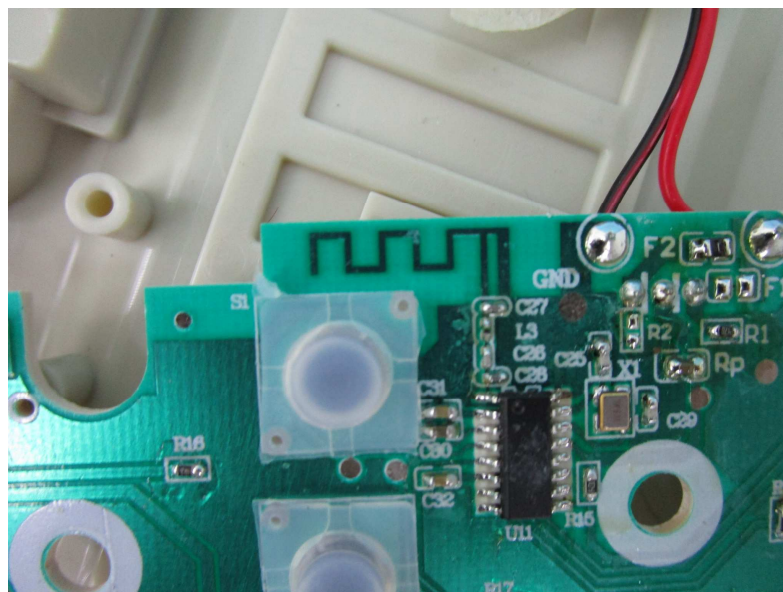
The transmitter has different control:

1. ON/OFF Switch – power control
2. Move Forward button – forward control
3. Move backward button – backward control
4. Turn left button – leftward control
5. Turn Right button– rightward control
6. Head Left button
7. Head Right button

Antenna Requirement (Section 15.203)

The EUT is use of a permanently antenna. It is soldered on the PCB. 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



TEST REPORT No: (5220)312-0008(A)

Test Results

Radiated Emissions (Fundamental)

Test Requirement: FCC Part 15 Section 15.249
 Test Method: ANSI C63.10
 Test Date(s): 2020-11-11
 Temperature: 25.0 °C
 Humidity: 55.0 %
 Mode of Operation: Transmission mode
 Tested Voltage: 3Vd.c. ("AAA" size battery x 2)

Test Procedure:

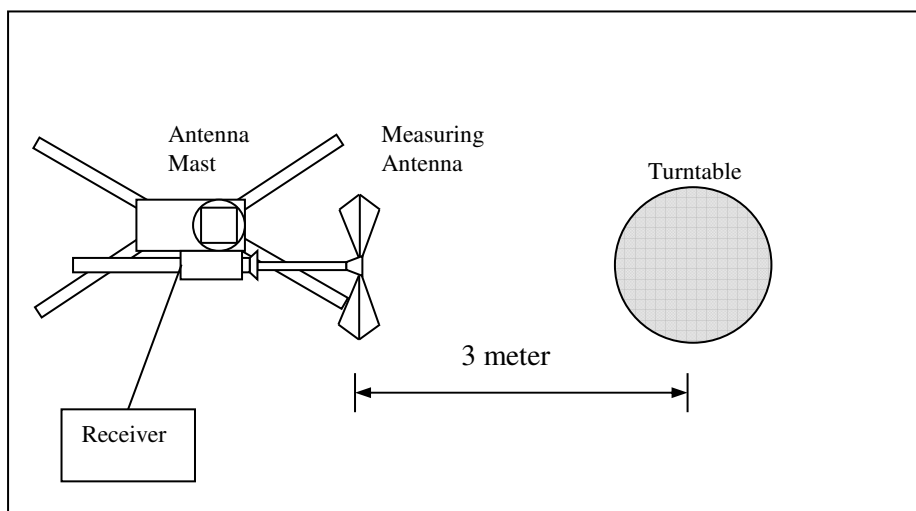
Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.10 – 2013.

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)
2419.00	H	-4.3	-20.8	93.6	114.0	-20.4	72.8	94.0	-21.2
2419.00	V	-4.3	-20.8	94.0	114.0	-20.0	73.2	94.0	-20.8

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)
2445.00	H	-4.3	-20.8	94.4	114.0	-19.6	73.6	94.0	-20.4
2445.00	V	-4.3	-20.8	94.7	114.0	-19.3	73.9	94.0	-20.1

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)
2474.00	H	-4.3	-20.8	91.7	114.0	-22.3	70.9	94.0	-23.1
2474.00	H	-4.3	-20.8	96.2	114.0	-17.8	75.4	94.0	-18.6

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.

**Duty Cycle Correction = $20\log(0.0913) = -20.8\text{dB}$

Note: Field Strength = Receiver Reading + Correction Factor
 Correction Factor = Antenna Factor + Cable Loss – Pre-amplifier Gain
 Margin = Field Strength - Limit
 Receiver setting: RBW = 1MHz
 VBW = 3MHz



TEST REPORT No: (5220)312-0008(A)

Radiated Emissions (Spurious Emission)

Test Requirement: FCC Part 15 Section 15.249
 Test Method: ANSI C63.10
 Test Date(s): 2020-11-11
 Temperature: 25.0 °C
 Humidity: 55.0 %
 Mode of Operation: Transmission mode
 Tested Voltage: 3Vd.c. ("AAA" size battery x 2)

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	-20.8	48.5	74.0	-25.5	27.7	54.0	-26.3
4837.98	H	-1.0	-20.8	62.1	74.0	-11.9	41.3	54.0	-12.7
7256.97	H	1.5	-20.8	64.8	74.0	-9.2	44.0	54.0	-10.0
9675.96	H	3.0	-20.8	52.5	74.0	-21.5	31.7	54.0	-22.3
12094.95	H	4.6	-20.8	54.1	74.0	-19.9	33.3	54.0	-20.7
14513.94	H	6.3	-20.8	59.8	74.0	-14.2	39.0	54.0	-15.0
16932.93	H	9.0	-20.8	59.3	74.0	-14.7	38.5	54.0	-15.5
19351.92	H	14.3	-20.8	42.5	74.0	-31.5	21.7	54.0	-32.3
21770.91	H	14.8	-20.8	38.8	74.0	-35.2	18.0	54.0	-36.0
24189.90	H	17.8	-20.8	39.0	74.0	-35.0	18.2	54.0	-35.8

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.

**Duty Cycle Correction = $20\log(0.0913) = -20.8\text{dB}$

Note: Field Strength = Receiver Reading + Correction Factor
 Correction Factor = Antenna Factor + Cable Loss – Preamplifier Gain
 Margin = Field Strength - Limit
 Receiver setting: RBW = 1MHz
 VBW = 3MHz



TEST REPORT No: (5220)312-0008(A)

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 (dB μ V/m)	Limit at 3m – Peak (dB μ V/m)	Margin - Peak (dB)	**Field Strength at 3m – Average (dB μ V/m)	Limit at 3m – Average (dB μ V/m)	Margin - Average (dB)
2400.00	V	-4.3	-20.8	52.1	74.0	-21.9	31.3	54.0	-22.7
4837.98	V	-1.0	-20.8	61.6	74.0	-12.4	40.8	54.0	-13.2
7256.97	V	1.5	-20.8	66.3	74.0	-7.7	45.5	54.0	-8.5
9675.96	V	3.0	-20.8	54.0	74.0	-20.0	33.2	54.0	-20.8
12094.95	V	4.6	-20.8	53.6	74.0	-20.4	32.8	54.0	-21.2
14513.94	V	6.3	-20.8	59.3	74.0	-14.7	38.5	54.0	-15.5
16932.93	V	9.0	-20.8	60.1	74.0	-13.9	39.3	54.0	-14.7
19351.92	V	14.3	-20.8	42.8	74.0	-31.2	22.0	54.0	-32.0
21770.91	V	14.8	-20.8	43.4	74.0	-30.6	22.6	54.0	-31.4
24189.90	V	17.8	-20.8	39.6	74.0	-34.4	18.8	54.0	-35.2

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.

**Duty Cycle Correction = $20\text{Log}(0.0913) = -20.8\text{dB}$

Note: Field Strength = Receiver Reading + Correction Factor

Correction Factor = Antenna Factor + Cable Loss – Preamplifier Gain

Margin = Field Strength - Limit

Receiver setting: RBW = 1MHz

VBW = 3MHz



TEST REPORT No: (5220)312-0008(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 (dB μ V/m)	Limit at 3m – Peak (dB μ V/m)	Margin - Peak (dB)	**Field Strength at 3m – Average (dB μ V/m)	Limit at 3m – Average (dB μ V/m)	Margin - Average (dB)
4889.98	H	-1.0	-20.8	61.0	74.0	-13.0	40.2	54.0	-13.8
7334.98	H	1.5	-20.8	62.9	74.0	-11.1	42.1	54.0	-11.9
9779.97	H	2.2	-20.8	53.2	74.0	-20.8	32.4	54.0	-21.6
12225.06	H	4.6	-20.8	53.7	74.0	-20.3	32.9	54.0	-21.1
14670.16	H	6.3	-20.8	59.1	74.0	-14.9	38.3	54.0	-15.7
17115.26	H	9.0	-20.8	61.2	74.0	-12.8	40.4	54.0	-13.6
19560.35	H	14.3	-20.8	43.2	74.0	-30.8	22.4	54.0	-31.6
22005.45	H	14.8	-20.8	38.7	74.0	-35.3	17.9	54.0	-36.1
24450.54	H	18.8	-20.8	41.3	74.0	-32.7	20.5	54.0	-33.5

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.

**Duty Cycle Correction = $20\log(0.0913) = -20.8\text{dB}$.

Note: Field Strength = Receiver Reading + Correction Factor

Correction Factor = Antenna Factor + Cable Loss – Pre-amplifier Gain

Margin = Field Strength - Limit

Receiver setting: RBW = 1MHz

VBW = 3MHz



TEST REPORT No: (5220)312-0008(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 (dB μ V/m)	Limit at 3m – Peak (dB μ V/m)	Margin - Peak (dB)	**Field Strength at 3m – Average (dB μ V/m)	Limit at 3m – Average (dB μ V/m)	Margin - Average (dB)
4889.98	V	-1.0	-20.8	62.4	74.0	-11.6	41.6	54.0	-12.4
7334.98	V	1.5	-20.8	65.5	74.0	-8.5	44.7	54.0	-9.3
9779.97	V	2.2	-20.8	52.2	74.0	-21.8	31.4	54.0	-22.6
12225.06	V	4.6	-20.8	53.5	74.0	-20.5	32.7	54.0	-21.3
14670.16	V	6.3	-20.8	59.8	74.0	-14.2	39.0	54.0	-15.0
17115.26	V	9.0	-20.8	61.0	74.0	-13.0	40.2	54.0	-13.8
19560.35	V	14.3	-20.8	42.2	74.0	-31.8	21.4	54.0	-32.6
22005.45	V	14.8	-20.8	38.2	74.0	-35.8	17.4	54.0	-36.6
24450.54	V	18.8	-20.8	40.8	74.0	-33.2	20.0	54.0	-34.0

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.

**Duty Cycle Correction = $20\log(0.0913) = -20.8\text{dB}$

Note: Field Strength = Receiver Reading + Correction Factor
 Correction Factor = Antenna Factor + Cable Loss – Preamplifier Gain
 Margin = Field Strength - Limit
 Receiver setting: RBW = 1MHz
 VBW = 3MHz



TEST REPORT No: (5220)312-0008(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	-20.8	56.3	74.0	-17.7	35.5	54.0	-18.5
4947.98	H	-1.0	-20.8	60.8	74.0	-13.2	40.0	54.0	-14.0
7421.97	H	1.5	-20.8	59.4	74.0	-14.6	38.6	54.0	-15.4
9896.06	H	2.2	-20.8	53.0	74.0	-21.0	32.2	54.0	-21.8
12370.16	H	4.4	-20.8	54.4	74.0	-19.6	33.6	54.0	-20.4
14844.26	H	9.0	-20.8	60.5	74.0	-13.5	39.7	54.0	-14.3
17318.35	H	9.4	-20.8	62.1	74.0	-11.9	41.3	54.0	-12.7
19792.45	H	13.1	-20.8	39.8	74.0	-34.2	19.0	54.0	-35.0
22266.54	H	15.6	-20.8	39.6	74.0	-34.4	18.8	54.0	-35.2
24740.64	H	18.8	-20.8	40.0	74.0	-34.0	19.2	54.0	-34.8

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.

**Duty Cycle Correction = $20\text{Log}(0.0913) = -20.8\text{dB}$

Note: Field Strength = Receiver Reading + Correction Factor
 Correction Factor = Antenna Factor + Cable Loss – Preamplifier Gain
 Margin = Field Strength - Limit
 Receiver setting: RBW = 1MHz
 VBW = 3MHz



TEST REPORT No: (5220)312-0008(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 (dB μ V/m)	Limit at 3m – Peak (dB μ V/m)	Margin - Peak (dB)	**Field Strength at 3m – Average (dB μ V/m)	Limit at 3m – Average (dB μ V/m)	Margin - Average (dB)
2483.50	V	-4.3	-20.8	57.9	74.0	-16.1	37.1	54.0	-16.9
4947.98	V	-1.0	-20.8	60.5	74.0	-13.5	39.7	54.0	-14.3
7421.97	V	1.5	-20.8	61.0	74.0	-13.0	40.2	54.0	-13.8
9896.06	V	2.2	-20.8	51.4	74.0	-22.6	30.6	54.0	-23.4
12370.16	V	4.4	-20.8	53.4	74.0	-20.6	32.6	54.0	-21.4
14844.26	V	9.0	-20.8	59.3	74.0	-14.7	38.5	54.0	-15.5
17318.35	V	9.4	-20.8	59.2	74.0	-14.8	38.4	54.0	-15.6
19792.45	V	13.1	-20.8	35.2	74.0	-38.8	14.4	54.0	-39.6
22266.54	V	15.6	-20.8	34.1	74.0	-39.9	13.3	54.0	-40.7
24740.64	V	18.8	-20.8	34.4	74.0	-39.6	13.6	54.0	-40.4

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.

**Duty Cycle Correction = $20\text{Log}(0.0913) = -20.8\text{dB}$

Note: Field Strength = Receiver Reading + Correction Factor

Correction Factor = Antenna Factor + Cable Loss – Pre-amplifier Gain

Margin = Field Strength - Limit

Receiver setting: RBW = 1MHz

VBW = 3MHz

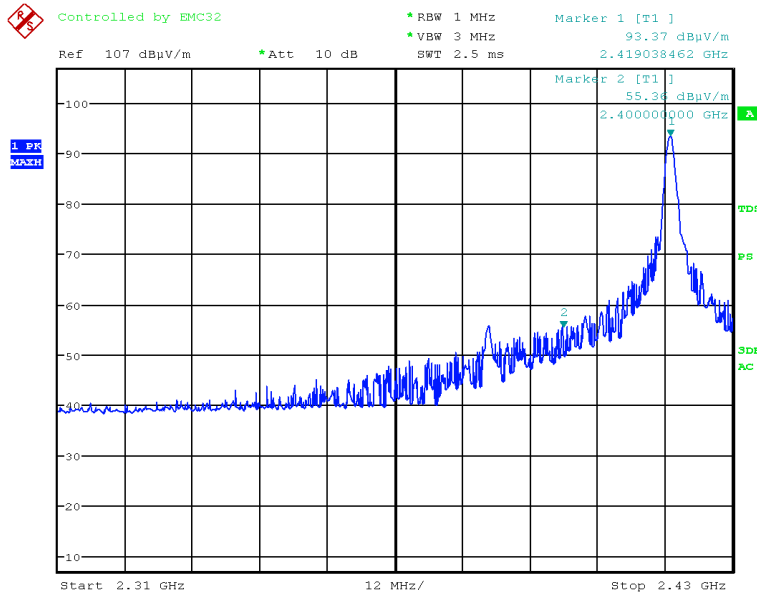


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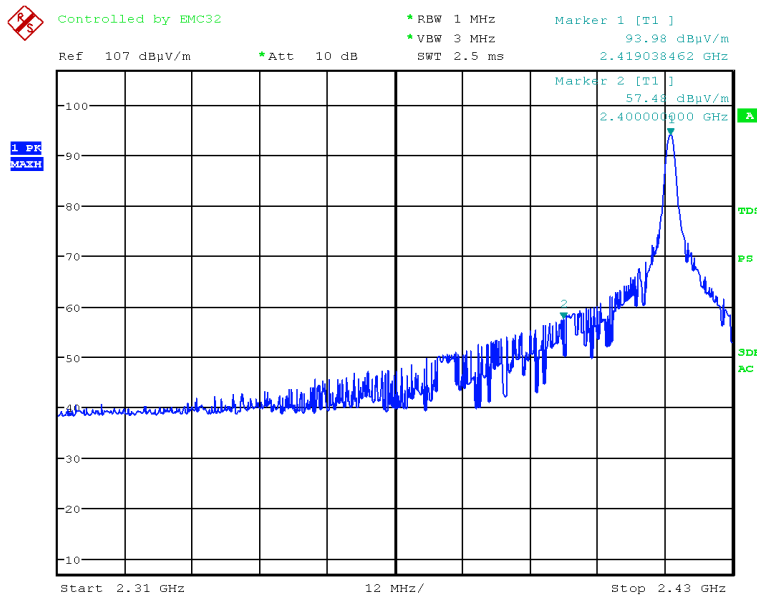
TEST REPORT No: (5220)312-0008(A)

Measurement Data

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



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



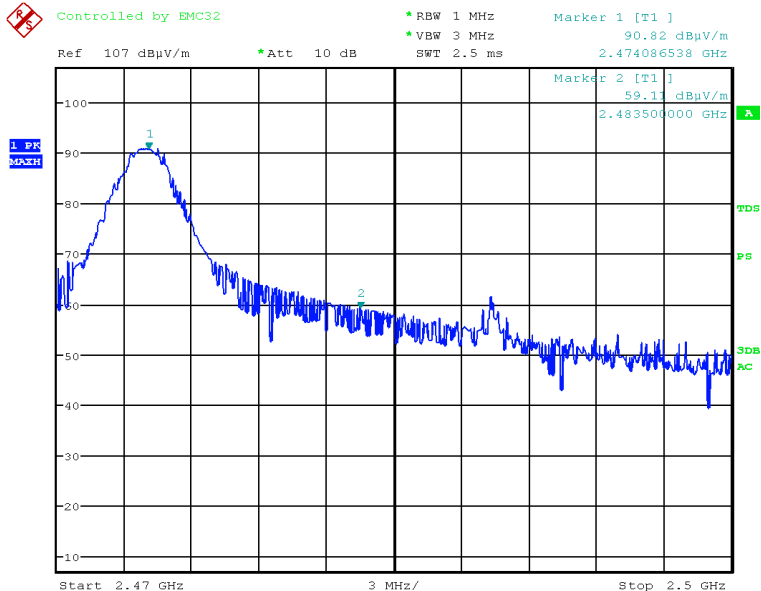
BUREAU VERITAS HONG KONG LIMITED –
Kowloon Bay Office
 1/F Pacific Trade Centre,
 2 Kai Hing Road, Kowloon Bay,
 Kowloon, HONG KONG
 Tel: +852 2331 0888
 Fax: +852 2331 0889
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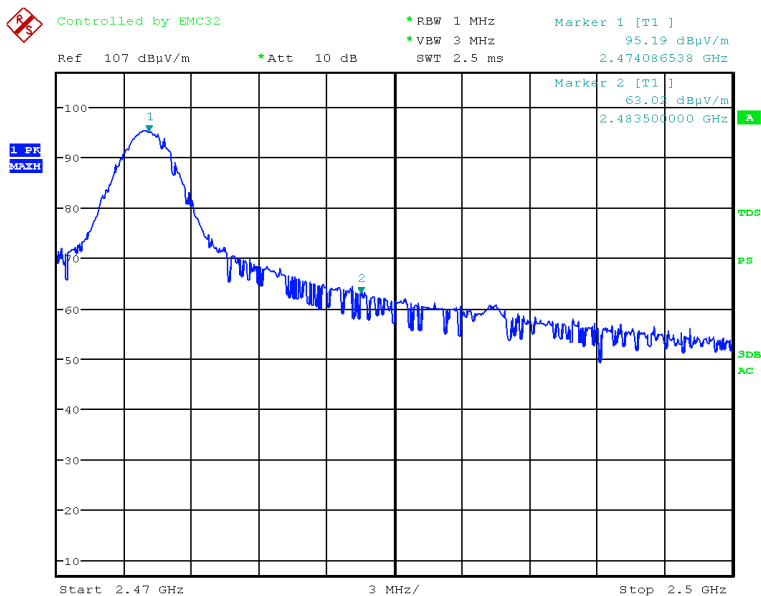
TEST REPORT No: (5220)312-0008(A)

Measurement Data

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



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





TEST REPORT No: (5220)312-0008(A)

Radiated Emissions (30MHz – 2.4GHz)

Test Requirement: FCC Part 15 Section 15.209
 Test Method: ANSI C63.10
 Test Date(s): 2020-11-24
 Temperature: 25.0 °C
 Humidity: 55.0 %
 Mode of Operation: On mode
 Tested Voltage: 3Vd.c. (“AAA” size battery x 2)

Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [$\mu\text{V}/\text{m}$]	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

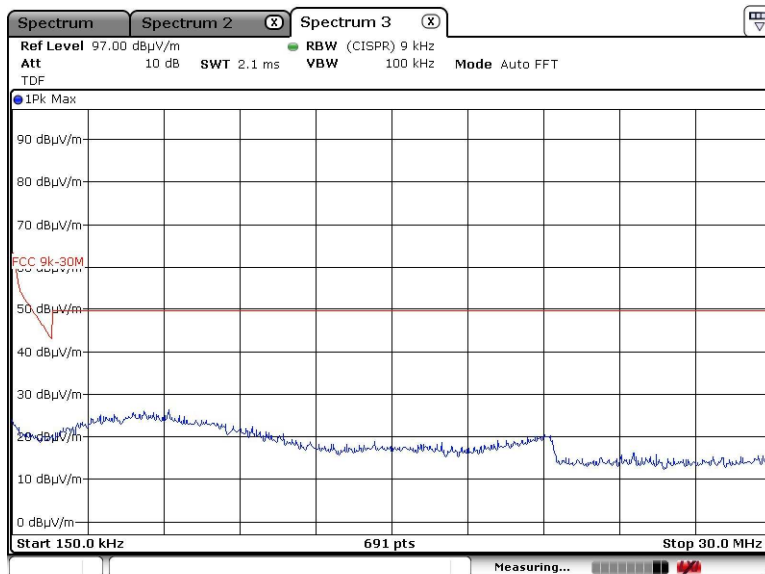
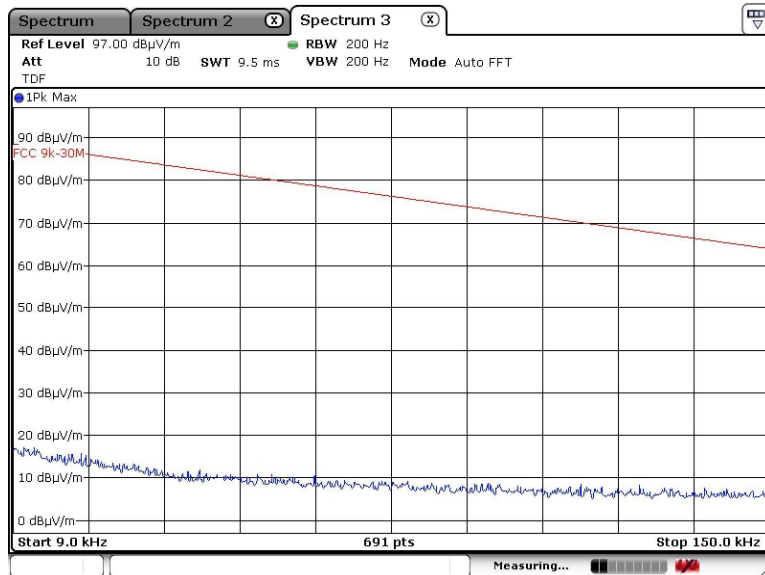
Frequency	Polarity (H/V)	Antenna Factor & Cable Loss (dB/m)	Field Strength (dB $\mu\text{V}/\text{m}$)	Limit (dB $\mu\text{V}/\text{m}$)	Margin (dB)
Emissions detected are more than 20 dB below the limit line(s) in 9kHz to 30MHz					

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

TEST REPORT No: (5220)312-0008(A)

Measurement Data

Test Plot of (On mode): PASS





TEST REPORT No: (5220)312-0008(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)
32.00	H	13.6	9.8	40.0	-30.2
165.63	H	13.9	12.1	43.5	-31.4
178.90	H	14.2	13.0	43.5	-30.5
318.41	H	14.9	12.4	46.0	-33.6
352.04	H	16.1	14.1	46.0	-31.9
742.70	H	22.5	23.6	46.0	-22.4

Frequency (MHz)	Polarity (H/V)	Antenna Factor & Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
52.98	V	9.8	6.8	40.0	-33.2
67.28	V	8.6	5.9	40.0	-34.1
113.04	V	11.1	8.8	43.5	-34.7
137.10	V	12.5	10.1	43.5	-33.4
630.50	V	21.9	22.2	46.0	-23.8
927.35	V	24.4	25.1	46.0	-20.9

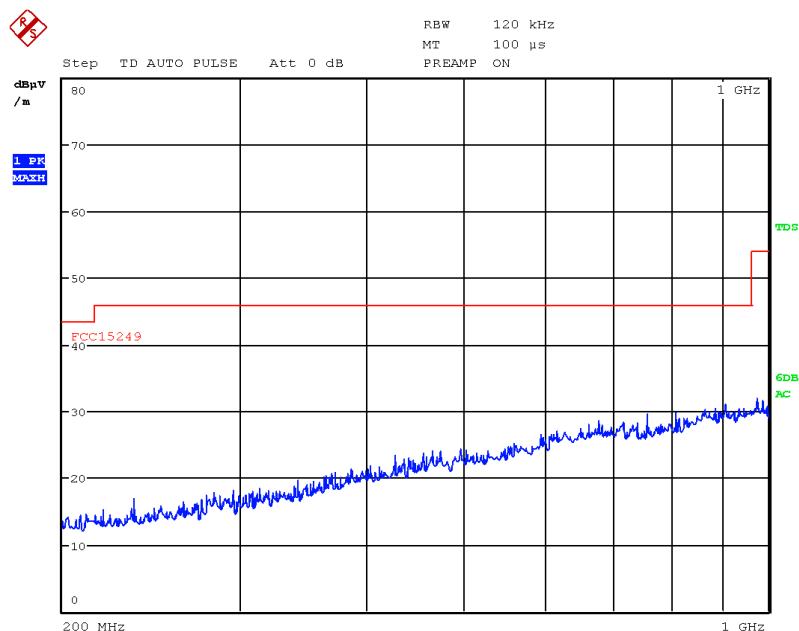
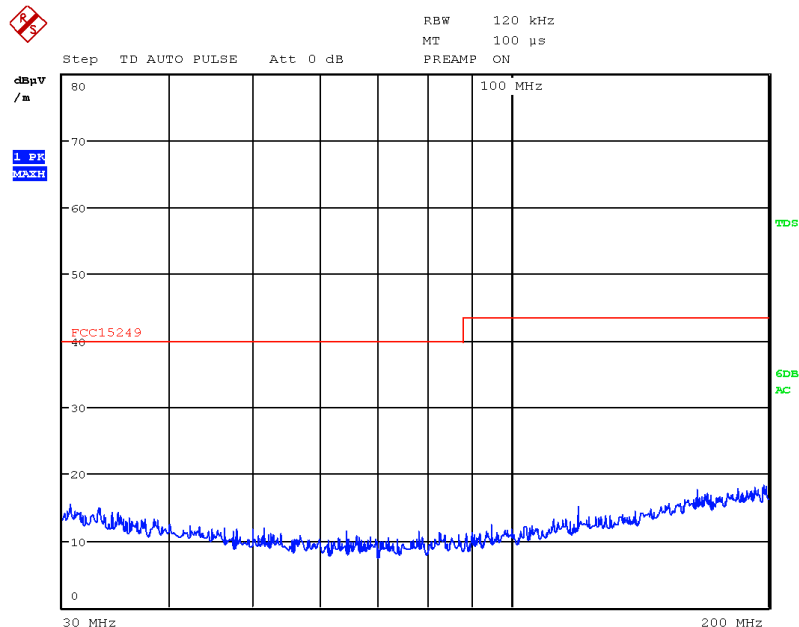
Note: Field Strength = Receiver Reading + Antenna Factor + Cable Loss
Margin = Field Strength - Limit

Receiver setting: RBW = 120KHz
VBW = 120KHz

TEST REPORT No: (5220)312-0008(A)

Measurement Data

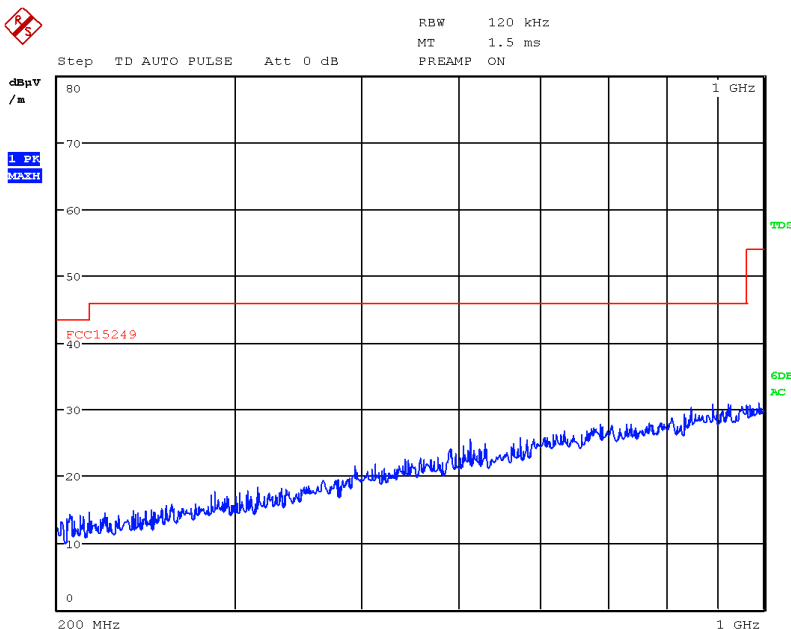
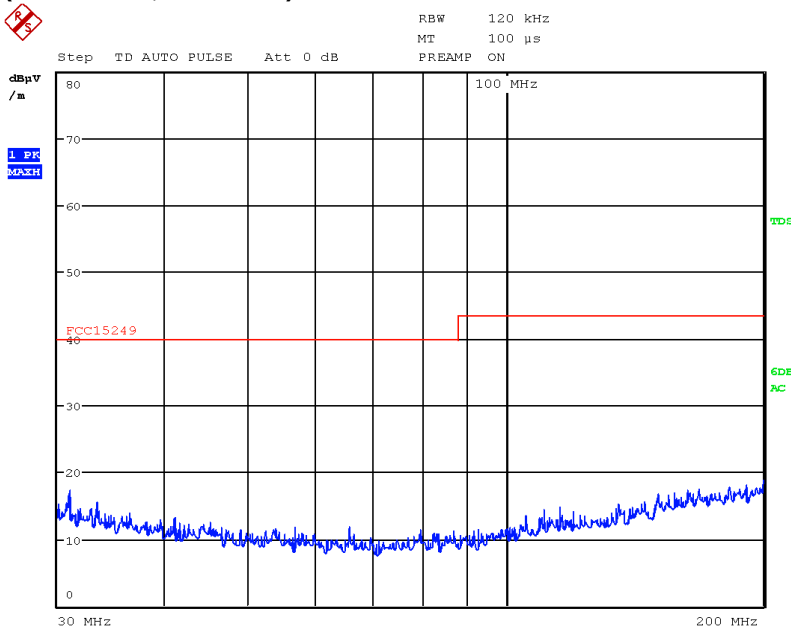
Test Plot of (On mode, Horizontal): PASS



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Measurement Data

Test Plot of (On mode, Vertical): PASS





TEST REPORT No: (5220)312-0008(A)

Frequency range of Fundamental Emission

Test Requirement: FCC 47 CFR 15.249
Test Method: ANSI C63.10 Clause 6.10
Test Date(s): 2020-11-24
Temperature: 25.0 °C
Humidity: 55.0 %
Mode of Operation: Transmission mode
Tested Voltage: 3Vd.c. ("AAA" size battery x 2)

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:

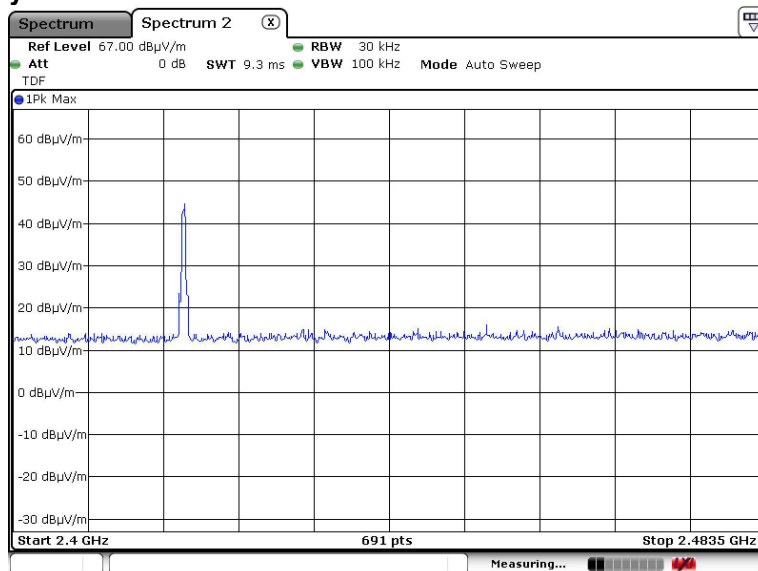
Frequency [MHz]	FCC Limits [MHz]
2419.00 – 2474.00	2400 – 2483.5

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Measurement Data :

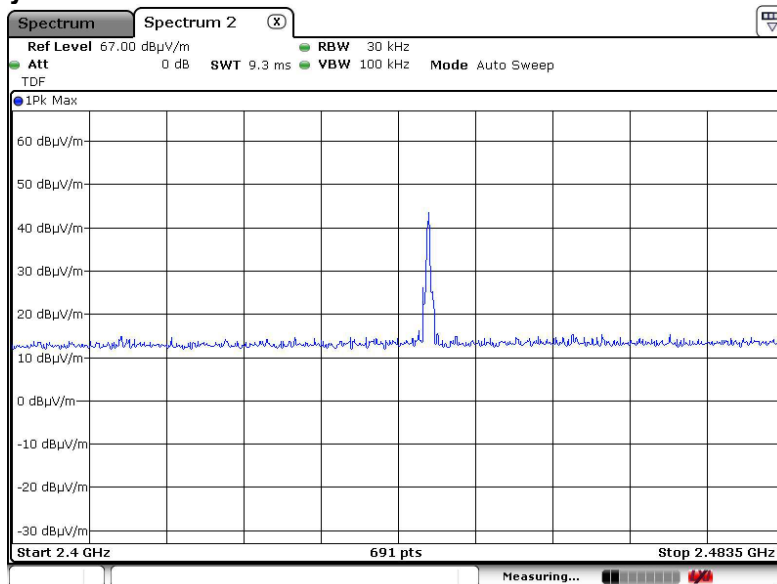
Test Result of Frequency Range of Fundamental Emission: PASS

Lowest Frequency – 2419.00MHz



Date: 27.NOV.2020 11:32:21

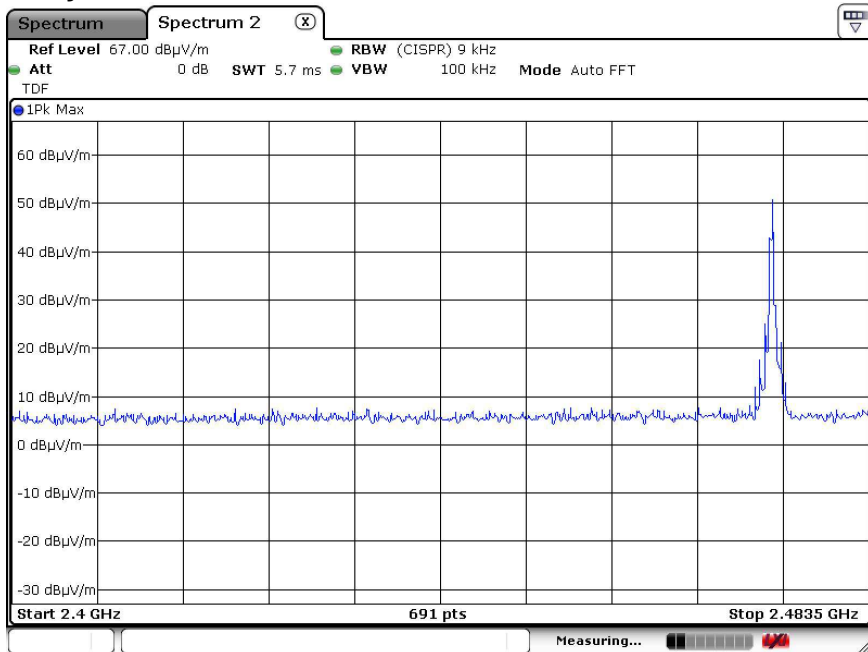
Middle Frequency – 2445.00MHz



Date: 27.NOV.2020 11:30:16

TEST REPORT No: (5220)312-0008(A)

Highest Frequency – 2474.00MHz



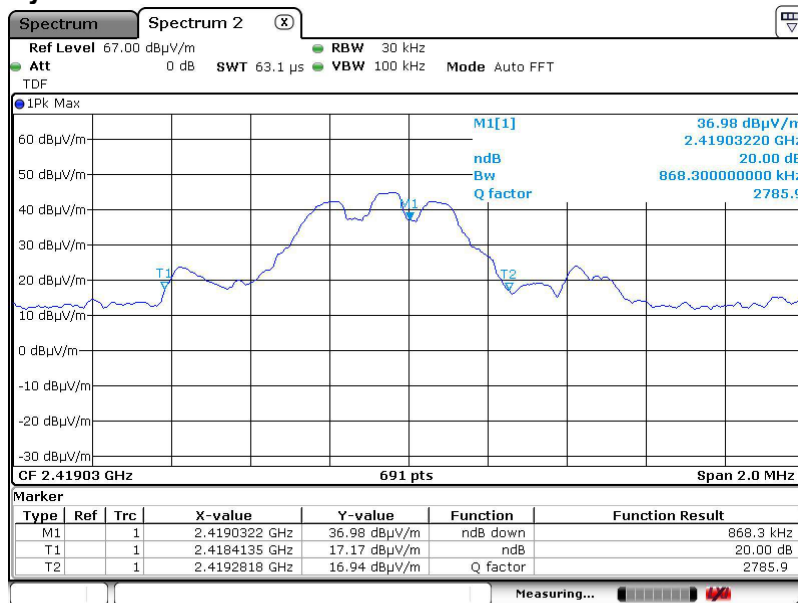
Date: 27.NOV.2020 11:25:47

TEST REPORT No: (5220)312-0008(A)

Measurement Data:

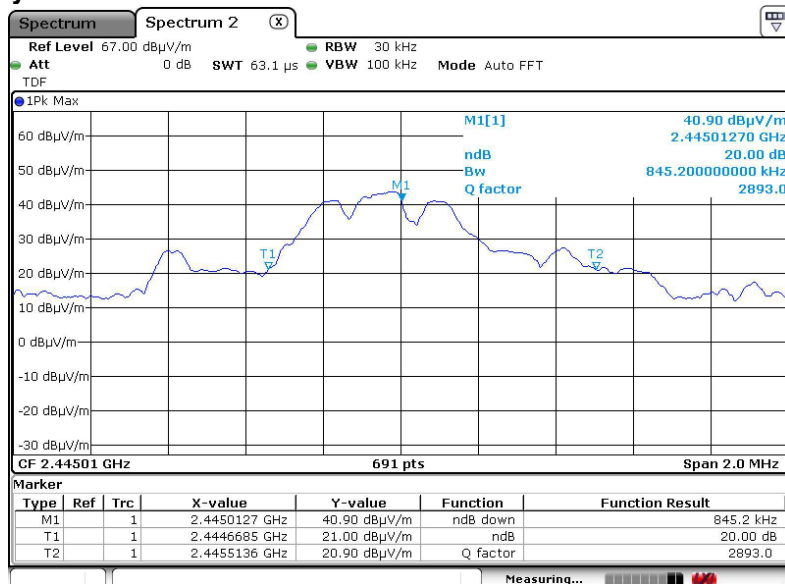
Test Result of 20dB Bandwidth of Fundamental Emission: PASS

Lowest Frequency – 2419.00MHz



Date: 27.NOV.2020 11:33:30

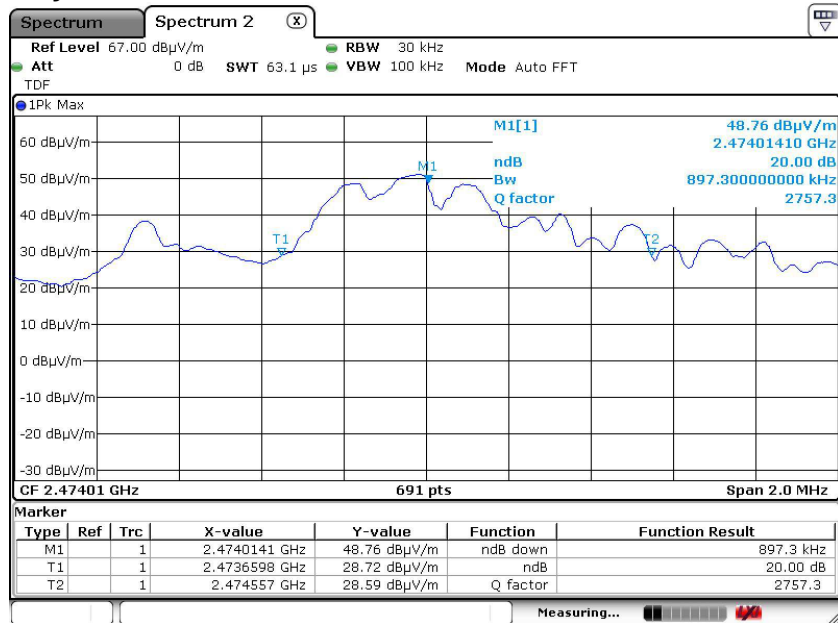
Middle Frequency – 2445.00MHz



Date: 27.NOV.2020 11:31:30

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Highest Frequency – 2474.00MHz



Date: 27.NOV.2020 11:29:06



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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 9 pulses (1.014msec). Assuming any combination of short and long pulses may be obtained due to encoding the worst case transmit duty cycle would be considered 9×1.014 per 100msec = 9.13% duty cycle.

Remarks:

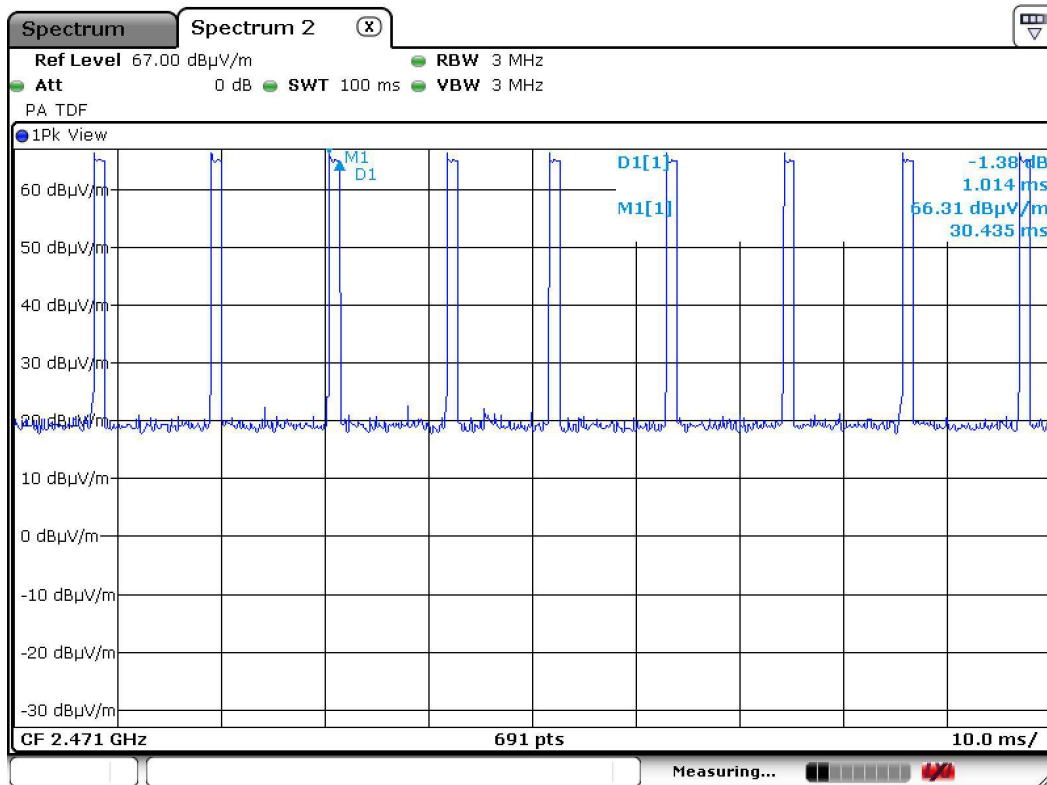
Duty Cycle Correction = $20\text{Log}(0.0913) = -20.8\text{dB}$

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

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Measurement Data:

Figure A [Pulse Train]

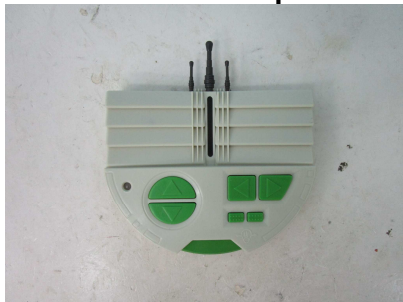


Date: 27.NOV.2020 11:53:18

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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



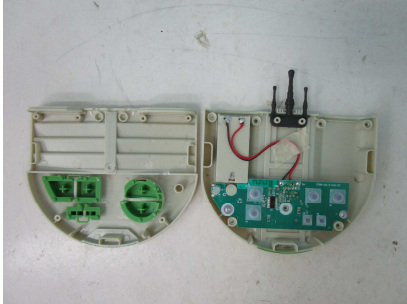
Battery Cover



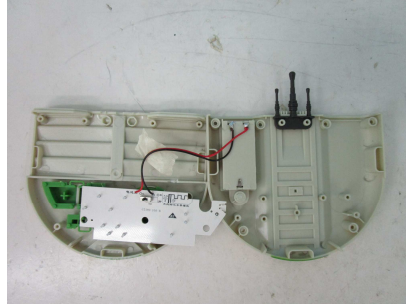
TEST REPORT No: (5220)312-0008(A)

Photographs of EUT

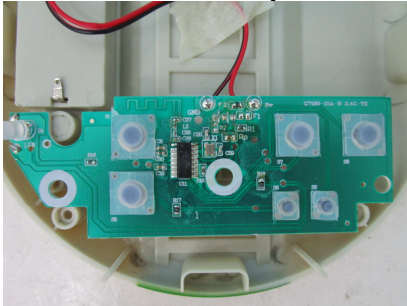
Internal View of the product



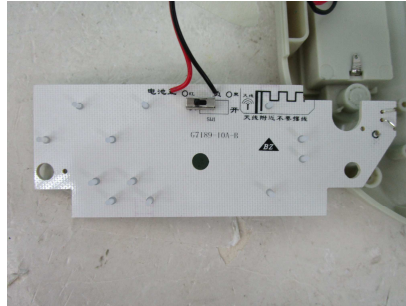
Internal View of the product



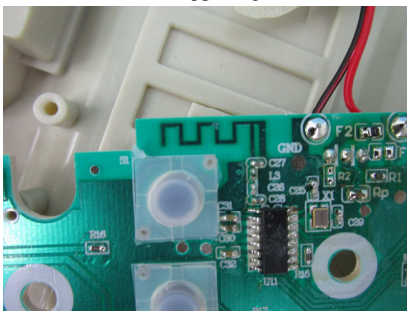
Inner Circuit Top View



Inner Circuit Bottom View

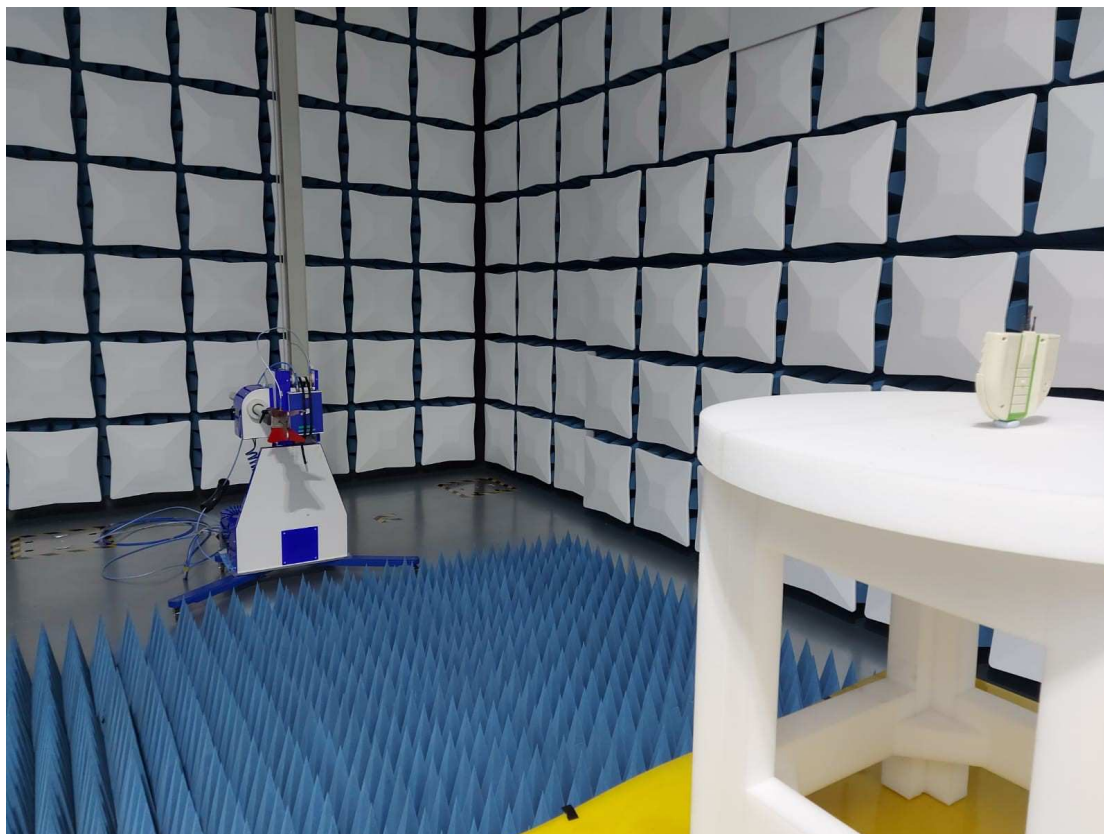


Antenna



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Measurement of Radiated Emission Test Set Up



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