A2LA Cert. No. 5463.01

FCC TEST REPORT

Test report

On Behalf of

Guangdong AUKATA Innovation Technology Co., Ltd

For

Remote control car

Model No.: 150700, 150500, 150501, 150502, 150503, 150600, 150700, 150701, 150702, 150703, XDKJ-001, XDKJ-002, XDKJ-003, XDKJ-004, XDKJ-005, XDKJ-006, XDKJ-007, XDKJ-008, XDKJ-009, XDKJ-010, XDKJ-011, XDKJ-012, XDKJ-013, XDKJ-014, XDKJ-015, XDKJ-016, XDKJ-017, XDKJ-018, XDKJ-019, XDKJ-020, XDKJ-021, XDKJ-022, XDKJ-023, XDKJ-024, XDKJ-025, XDKJ-026, XDKJ-027, XDKJ-028, XDKJ-029, XDKJ-030, XDKJ-031, XDKJ-032, XDKJ-033, XDKJ-034, XDKJ-035, XDKJ-036, XDKJ-037, XDKJ-038, XDKJ-039, XDKJ-040, XDKJ-041, XDKJ-042, XDKJ-043, XDKJ-044, XDKJ-045, XDKJ-046, XDKJ-047, XDKJ-048, XDKJ-049, XDKJ-050, XDKJ-051, XDKJ-052, XDKJ-053, XDKJ-054, XDKJ-055, XDKJ-056, XDKJ-057, XDKJ-058, XDKJ-059, XDKJ-060, XDKJ-061, XDKJ-062, XDKJ-063, XDKJ-064, XDKJ-065, XDKJ-066, XDKJ-067, XDKJ-068, XDKJ-069, XDKJ-070, XDKJ-071, XDKJ-072, XDKJ-073, XDKJ-074, XDKJ-075, XDKJ-076, XDKJ-077, XDKJ-078, XDKJ-079, XDKJ-080, XDKJ-081, XDKJ-082, XDKJ-083, XDKJ-084, XDKJ-085, XDKJ-086, XDKJ-087, XDKJ-088, XDKJ-089, XDKJ-090, XDKJ-091, XDKJ-092, XDKJ-093, XDKJ-094, XDKJ-095, XDKJ-096, XDKJ-097, XDKJ-098, XDKJ-099, XDKJ-100

FCC ID: 2A4KU-021XDKJ

Prepared for : **Guangdong AUKATA Innovation Technology Co., Ltd**
Daping Industrial District, Jianyang Village, Lianxia Town, Chenghai District, Shantou City, Guangdong Province, China

Prepared By : **Shenzhen Tongzhou Testing Co.,Ltd**
1th Floor, Building 1, Haomai High-tech Park, Huating Road 387, Dalang Street, Longhua, Shenzhen, China

Date of Test:	**2024/8/2 ~ 2024/8/7**
Date of Report:	**2024/8/8**
Report Number:	**TZ0035240803FRF11**

The test report apply only to the specific sample(s) tested under stated test conditions
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

TEST RESULT CERTIFICATION

Applicant's name .....:	**Guangdong AUKATA Innovation Technology Co., Ltd**
Address.....:	Daping Industrial District, Jianyang Village, Lianxia Town, Chenghai District, Shantou City, Guangdong Province, China
Manufacture's Name .....:	**Guangdong AUKATA Innovation Technology Co., Ltd**
Address.....:	Daping Industrial District, Jianyang Village, Lianxia Town, Chenghai District, Shantou City, Guangdong Province, China

Product description

Trade Mark .....:	N/A
Product name.....:	Remote control car
Model and/or type reference .:	Refer to page 1
Standards .....:	FCC Rules and Regulations Part 15 Subpart C Section 15.249 ANSI C63.10: 2013

Date of Test .....:

Date (s) of performance of tests .....:	2024/8/2 ~ 2024/8/7
Date of Issue .....:	2024/8/8
Test Result.....:	**Pass**

Testing Engineer : Allen Lai

(Allen Lai)

Technical Manager : Hugo Chen

(Hugo Chen)

Authorized Signatory : Andy Zhang

(Andy Zhang)

Revision History

Revision	Issue Date	Revisions	Revised By
00	2024/8/8	Initial Issue	Andy Zhang

TABLE OF CONTENTS

1 GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT	: Remote control car
Model Number	: Refer to page 1
Model Declaration	: All the same except for the model name
Test Model	: 150700
Power Supply	: DC 4.5V by 1.5V*3 batteries
Hardware version	: CS03T
Software version	: V1.0

1.2 Wireless Function Tested in this Report

SRD	
Channel Number	: 2405-2480MHz
Modulation Technology	: GFSK
Antenna Type And Gain	: Internal Antenna, 0.59dBi

Note 1: Antenna position refer to EUT Photos
Note 2: The above information supplied by the applicant

1.3 Description of Test Facility

FCC

Designation Number: CN1275

Test Firm Registration Number: 167722

Shenzhen Tongzhou Testing Co.,Ltd has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

A2LA

Certificate Number: 5463.01

Shenzhen Tongzhou Testing Co.,Ltd has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

IC

ISED#: 22033

CAB identifier: CN0099

Shenzhen Tongzhou Testing Co.,Ltd has been listed by Innovation, Science and Economic Development Canada to perform electromagnetic emission measurement.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010

1.4 Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the Shenzhen Tongzhou Testing Co.,Ltd’s quality system

acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

1.5 Measurement Uncertainty

Test Item		Frequency Range	Uncertainty	Note
Radiation Uncertainty	:	9KHz~30MHz	±3.08dB	(1)
		30MHz~1000MHz	±3.92dB	(1)
		1GHz~40GHz	±4.28dB	(1)
Conduction Uncertainty	:	150kHz~30MHz	±2.71dB	(1)

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.6 Description of Test Modes

The EUT has been tested under operating condition.

All test modes were tested, only the result of the worst case was recorded in the report.

All test modes were tested, only the result of the worst case was recorded in the report.

Channel List & Frequency

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2405	**29**	2433	**57**	2461
2	2406	**30**	2434	**58**	2462
3	2407	**31**	2435	**59**	2463
4	2408	**32**	2436	**60**	2464
5	2409	**33**	2437	**61**	2465
6	2410	**34**	2438	**62**	2466
7	2411	**35**	2439	**63**	2467
8	2412	**36**	2440	**64**	2468
9	2413	**37**	2441	**65**	2469
10	2414	**38**	2442	**66**	2470
11	2415	**39**	2443	**67**	2471
12	2416	**40**	2444	**68**	2472
13	2417	**41**	2445	**69**	2473
14	2418	**42**	2446	**70**	2474
15	2419	**43**	2447	**71**	2475
16	2420	**44**	2448	**72**	2476
17	2421	**45**	2449	**73**	2477
18	2422	**46**	2450	**74**	2478
19	2423	**47**	2451	**75**	2479
20	2424	**48**	2452	**76**	2480
21	2425	**49**	2453		
22	2426	**50**	2454		
23	2427	**51**	2455		
24	2428	**52**	2456		
25	2429	**53**	2457		
26	2430	**54**	2458		
27	2431	**55**	2459		
28	2432	**56**	2460		

Test Channel

Channel	Transmitting Frequency (MHz)
1	2405
41	2445
76	2480

2 TEST METHODOLOGY

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

The radiated testing was performed at an antenna-to-EUT distance of 3 meters. All radiated and conducted emissions measurement was performed at Shenzhen Tongzhou Testing Co.,Ltd

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.203, 15.205, 15.207, 15.209 and 15.249 under the FCC Rules Part 15 Subpart C.

2.3 Test Sample

Sample ID	Description
TZ0035240803–1#	Engineer sample – continuous transmit
TZ0035240803–2#	Normal sample – Intermittent transmit

3 SYSTEM TEST CONFIGURATION

3.1 3.1. Justification

The system was configured for testing in a continuous transmits condition.

3.2 3.2. EUT Exercise Software

☐The system was configured for testing in a continuous transmits condition and change test channels by Press a button provided by application.

☒The system was configured for Bluetooth testing in a continuous transmits condition and change test channels by engineer mode (Button launch) provided by application.

3.3 3.3. Special Accessories

No.	Equipment	Manufacturer	Model No.	Serial No.	Length	shielded/ unshielded	Notes
1	TV	AOC	280LM00003	JVVGJA000307	/	/	/

3.4 3.4. Block Diagram/Schematics

Please refer to the related document

3.5 3.5. Equipment Modifications

Shenzhen Tongzhou Testing Co.,Ltd has not done any modification on the EUT.

3.6 3.6. Test Setup

Please refer to the test setup photo.

4 SUMMARY OF TEST RESULTS

Applied Standard: FCC Part 15 Subpart C			
FCC Rules	**Description of Test**	**Test Sample**	**Result**
/	Duty Cycle	TZ0035240803–1#	Compliant
§15.215	20dB Bandwidth	TZ0035240803–1#	Compliant
§15.249(a), §15.249(c), §15.249(d),§15.249(e), §15.205, §15.209	Radiated Emission and Field strength of fundamental	TZ0035240803–1#	Compliant
§15.207(a)	Conducted Emissions	N/A	N/A
§15.203	Antenna Requirements	N/A	Compliant

5 TEST RESULT

5.1 On Time and Duty Cycle

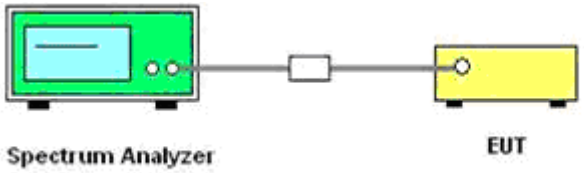
5.1.1. Standard Applicable

None; for reporting purpose only.

5.1.3. Test Procedures

1. Set the centre frequency of the spectrum analyzer to the transmitting frequency;
2. Set the span=0MHz, RBW=8MHz, VBW=8MHz;
3. Detector = peak;
4. Trace mode = Single hold.

5.1.4. Test Setup Layout

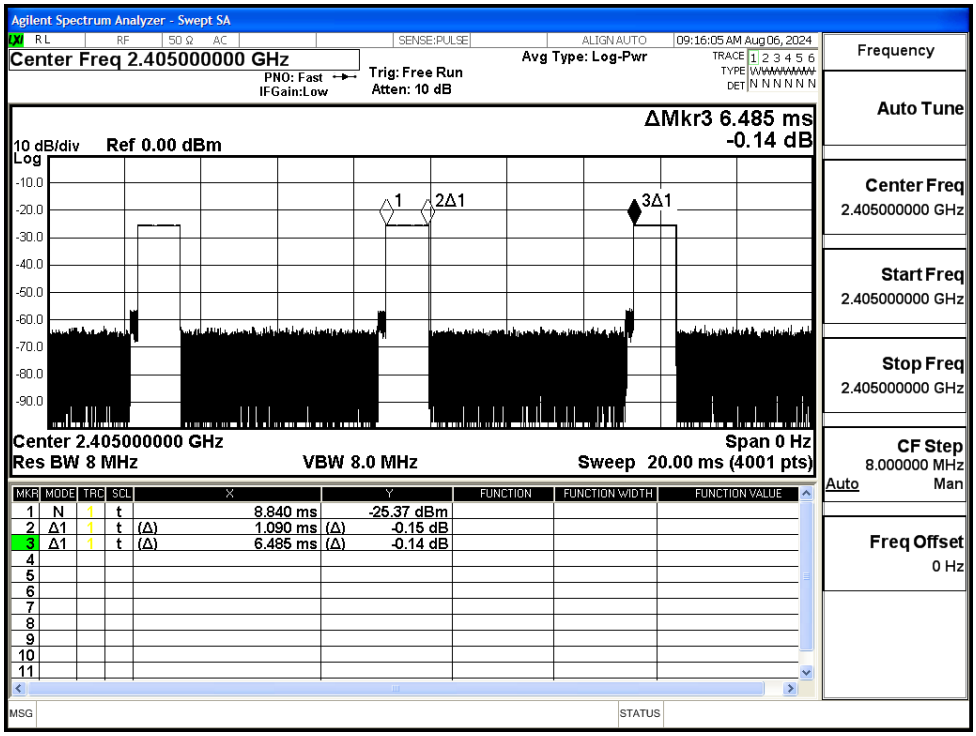


5.1.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.1.6. Test result

TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
SRD	Ant1	2405	1.09	6.49	16.8	-7.75
SRD	Ant1	2445	1.09	6.47	16.8	-7.75
SRD	Ant1	2480	1.07	6.49	16.5	-7.83



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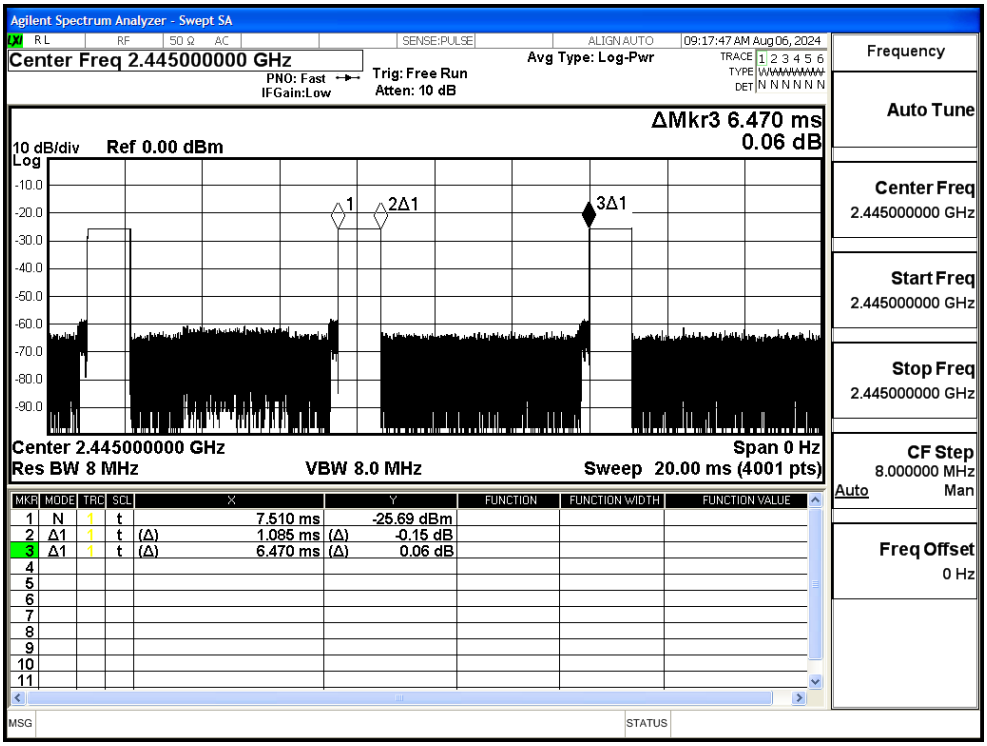
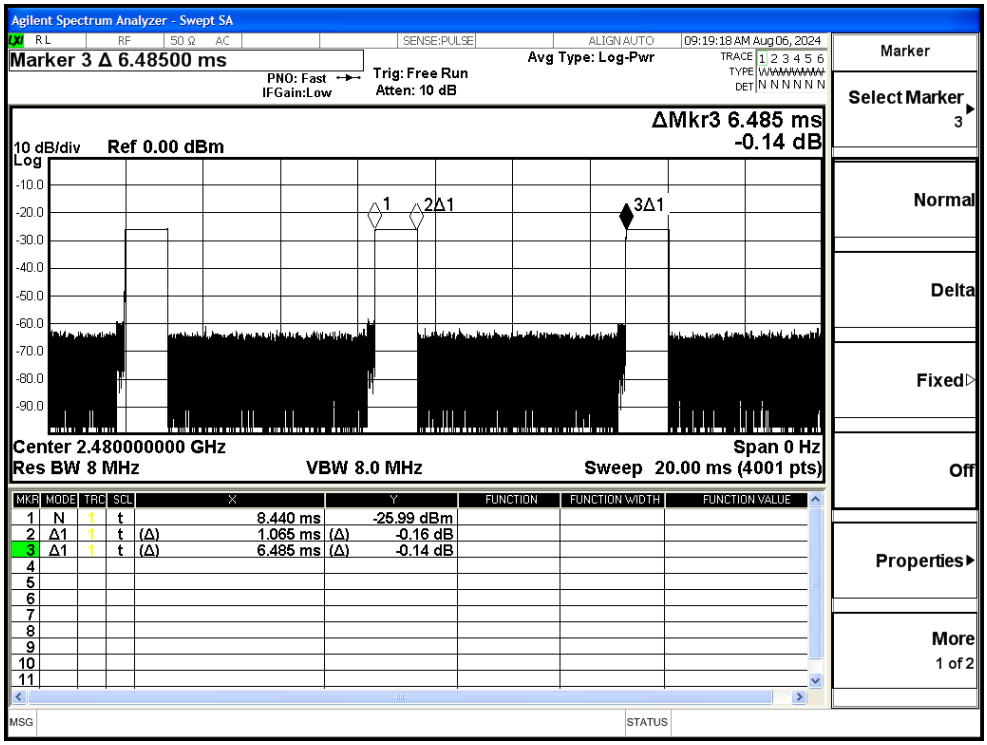


NTNV-SRD-Ant1-2480



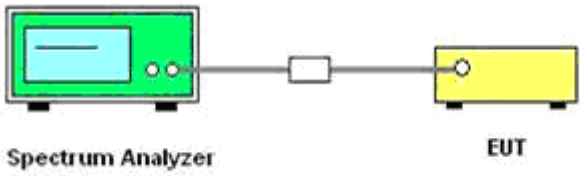
NTNV-SRD-Ant1-2480

5.2 20 dB Bandwidth

5.2.1 Limit

N/A

5.2.2 Block Diagram of Test Setup



5.2.3 Test Procedure

1). Span = approximately 2 to 5 times the 20 dB bandwidth.

2). RBW ≥1% of the 20 dB bandwidth, VBW ≥3*RBW.

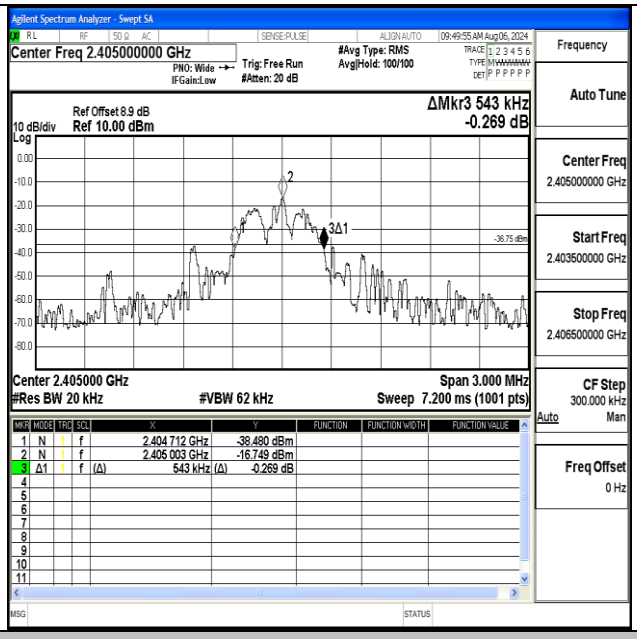
3). Detector function = peak.

4). Trace = max hold.

5.2.4 Test Results

Pass

TestMode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
SRD	Ant1	2405	0.543	2404.712	2405.255	---	---
SRD	Ant1	2445	0.525	2444.718	2445.243	---	---
SRD	Ant1	2480	0.519	2479.721	2480.240	---	---



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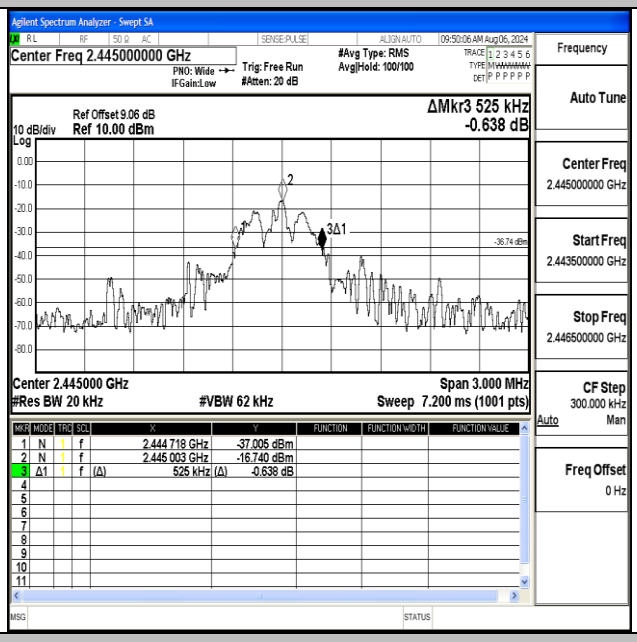
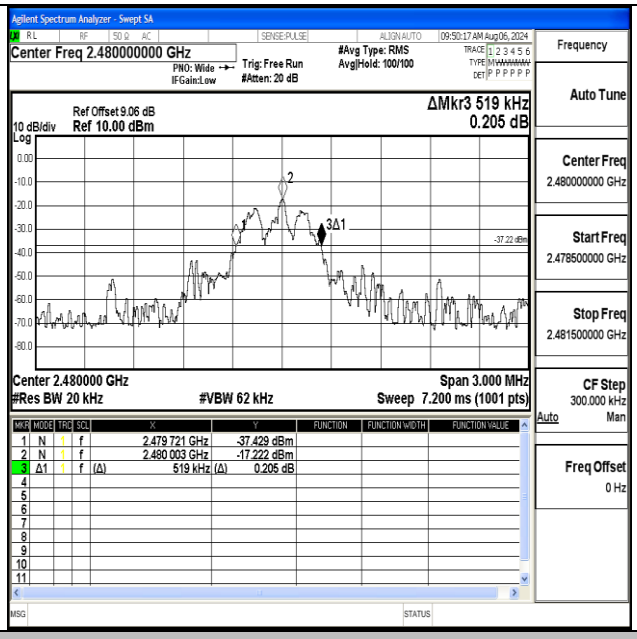


SRD-Ant1-2445



SRD-Ant1-2480

5.3 Radiated Emissions Measurement

5.3.1 Standard Applicable

15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
\1\ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293.	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(\2\)
13.36-13.41			

\1\ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

\2\ Above 38.6

According to §15.249 (d): Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

According to §15.249 (a): Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental		Field strength of harmonics	
	millivolts/meter	dBuV/m	microvolts/meter	dBuV/m
902-928 MHz	50	94	500	54
2400-2483.5 MHz	50	94	500	54
5725-5875 MHz	50	94	500	54
24.0-24.25 GHz	250	108	2500	68

As shown in §15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not

exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth

5.3.2 Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB/VB 200Hz/1KHz for QP/AVG
Start ~ Stop Frequency	150kHz~30MHz / RB/VB 9kHz/30KHz for QP/AVG
Start ~ Stop Frequency	30MHz~1000MHz / RB/VB 120kHz/1MHz for QP

5.3.3 Test Procedures

1) Sequence of testing 9 kHz to 30 MHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions.

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Premeasurement:

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna height is 1.0 meter.

--- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:

--- Identified emissions during the premeasurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axes (0° to 360°).

--- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

2) Sequence of testing 30 MHz to 1 GHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Premeasurement:

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna is polarized vertical and horizontal.

--- The antenna height changes from 1 to 3 meter.

--- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45°) and antenna movement between 1 and 4 meter.

--- The final measurement will be done with QP detector with an EMI receiver.

--- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

3) Sequence of testing 1 GHz to 26 GHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Premeasurement:

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna is polarized vertical and horizontal.

--- The antenna height scan range is 1 meter to 4 meter.

--- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

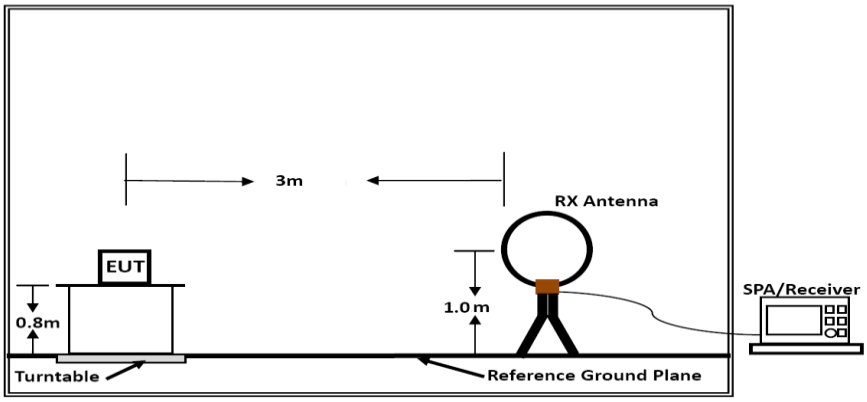
--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45°) and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.

--- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.

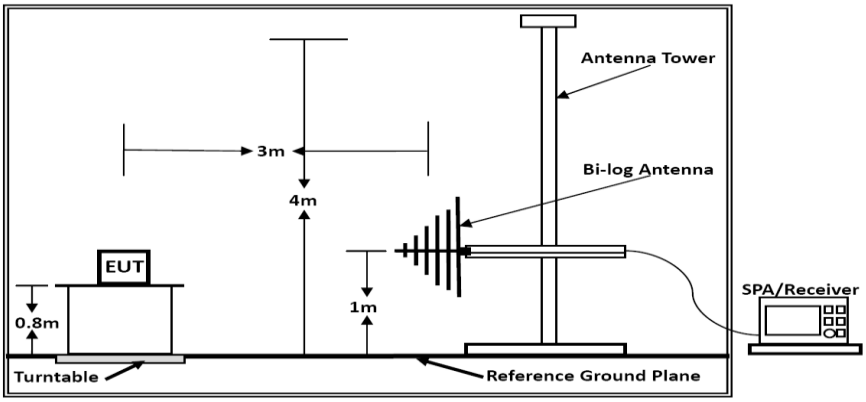
--- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

5.3.4 Test Setup Layout

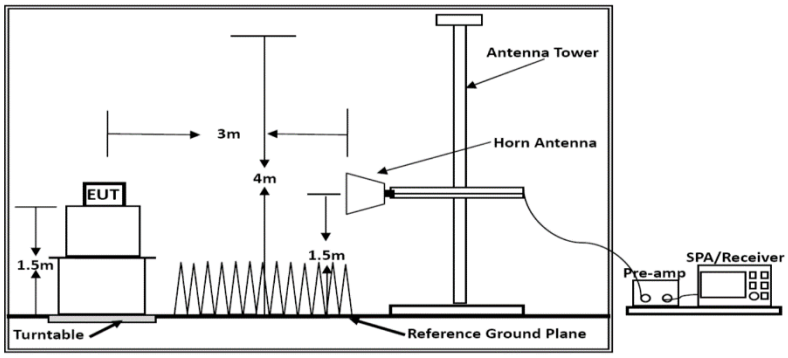
For radiated emissions below 30MHz



Below 30MHz



Below 1GHz



Above 1GHz

5.3.5 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

6.6.6. Radiated Emissions

Temperature	22.8℃	Humidity	56%
Test Engineer	Allen Lai	Configurations	Low Channel/High Channel

5.3.5.1 Results of Radiated Emissions (9 kHz~30MHz)

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Over Limit (dBuV)	Remark
-	-	-	-	See Note

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

Distance extrapolation factor = 40 log (specific distance / test distance) (dB);
Limit line = specific limits (dBuV) + distance extrapolation factor.

PASS.

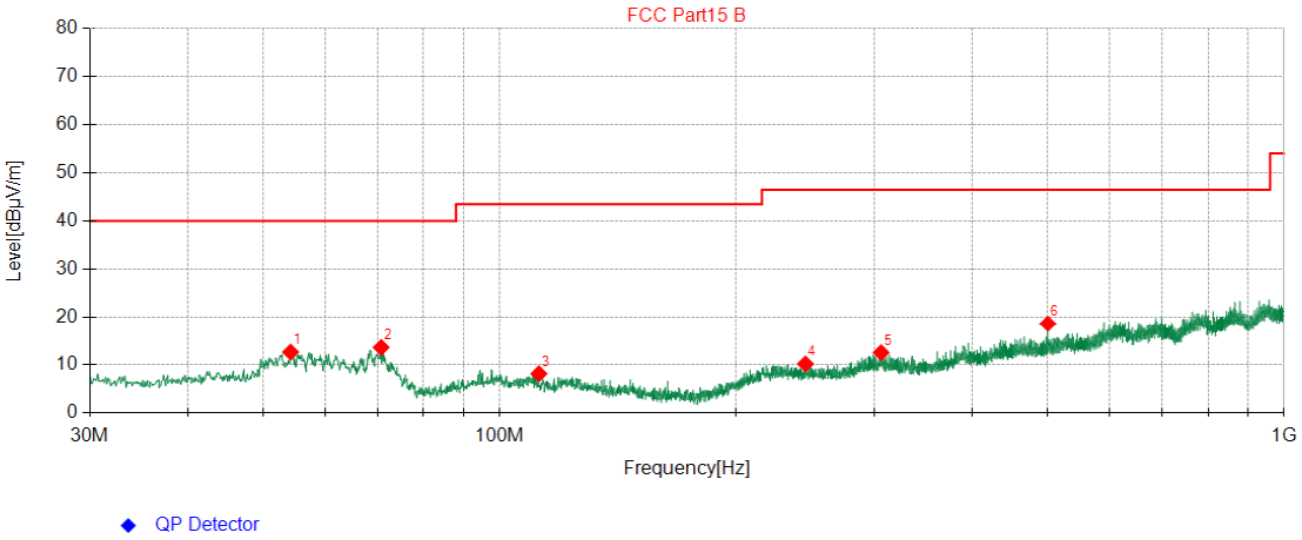
Only record the worst test result in this report.

The test data please refer to following page.

5.3.5.2 Results of Radiated Emissions (30MHz ~1GHz)

Below 1GHz

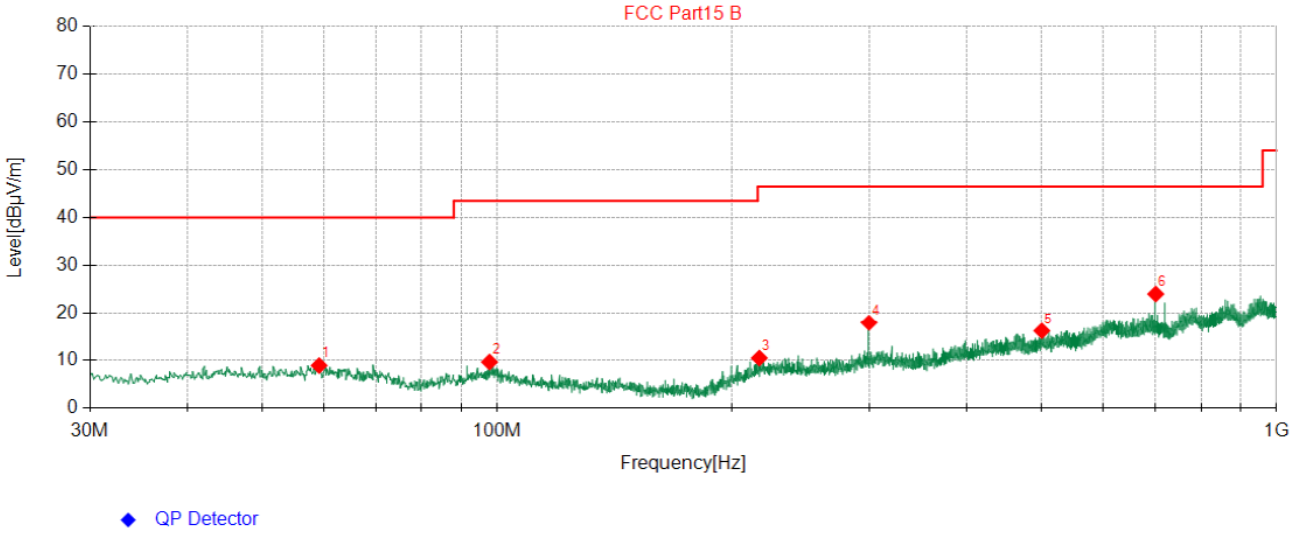
Vertical



Suspected Data List									
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	54.12	27.43	-14.79	12.64	40.00	27.36	100	208	Vertical
2	70.61	31.93	-18.33	13.60	40.00	26.40	100	72	Vertical
3	112.2	24.52	-16.37	8.15	43.50	35.35	100	140	Vertical
4	245.4	24.19	-14.01	10.18	46.50	36.32	100	117	Vertical
5	306.4	25.16	-12.63	12.53	46.50	33.97	100	110	Vertical
6	499.9	26.70	-8.06	18.64	46.50	27.86	100	354	Vertical

****Note:*
1. Level [dBµV/m] = Reading [dBµV] + Factor [dB/m]
2. Margin [dB] = Limit [dBµV/m] - Level [dBµV/m]

Horizontal



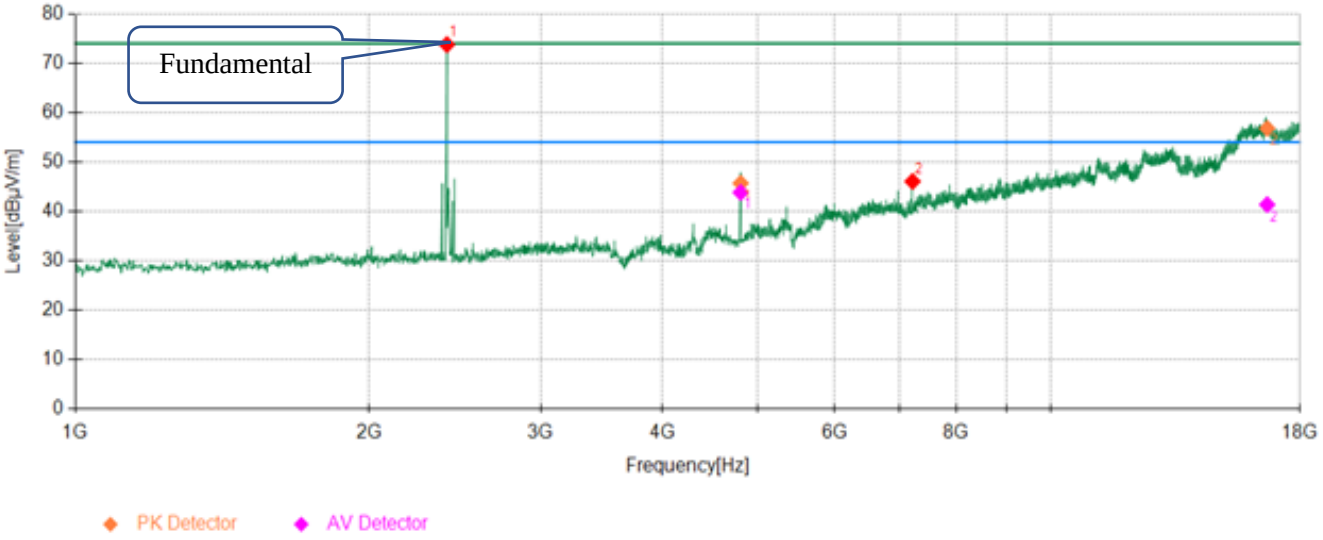
Suspected Data List									
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	59.1	24.43	-15.51	8.92	40.00	31.08	100	287	Horizontal
2	97.77	26.02	-16.36	9.66	43.50	33.84	100	198	Horizontal
3	216.9	25.39	-14.91	10.48	46.50	36.02	100	32	Horizontal
4	300.0	30.77	-12.81	17.96	46.50	28.54	100	277	Horizontal
5	499.9	24.26	-8.06	16.20	46.50	30.30	100	271	Horizontal
6	700.0	28.43	-4.35	24.08	46.50	22.42	100	306	Horizontal

****Note:*
1. Level [dBµV/m] = Reading [dBµV] + Factor [dB/m]
2. Margin [dB] = Limit [dBµV/m] - Level [dBµV/m]

5.3.5.3 Results of Radiated Emissions (1GMHz ~26GHz)

Above 1GHz (Low Channel)

Horizontal



Suspected Data List									
NO.	Freq. [MHz]	Level [dBµV/m]	Reading [dBµV]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2404.625	73.75	84.24	-10.49	74.00	0.25	150	354	Horizontal
2	7215.625	46.08	39.65	6.43	74.00	27.92	150	358	Horizontal

PK Final Data List									
NO.	Freq. [MHz]	PK Reading [dBµV]	Factor [dB]	PK Value [dBµV/m]	PK Limit [dBµV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4810.12	47.36	-1.67	45.69	74.00	28.31	150	348	Horizontal
2	16659.1	35.77	21.03	56.80	74.00	17.20	150	299	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	AV Reading [dBµV]	Factor [dB]	AV Value [dBµV/m]	AV Limit [dBµV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4810.12	45.51	-1.67	43.84	54.00	10.16	150	348	Horizontal
2	16659.1	20.35	21.03	41.38	54.00	12.62	150	299	Horizontal

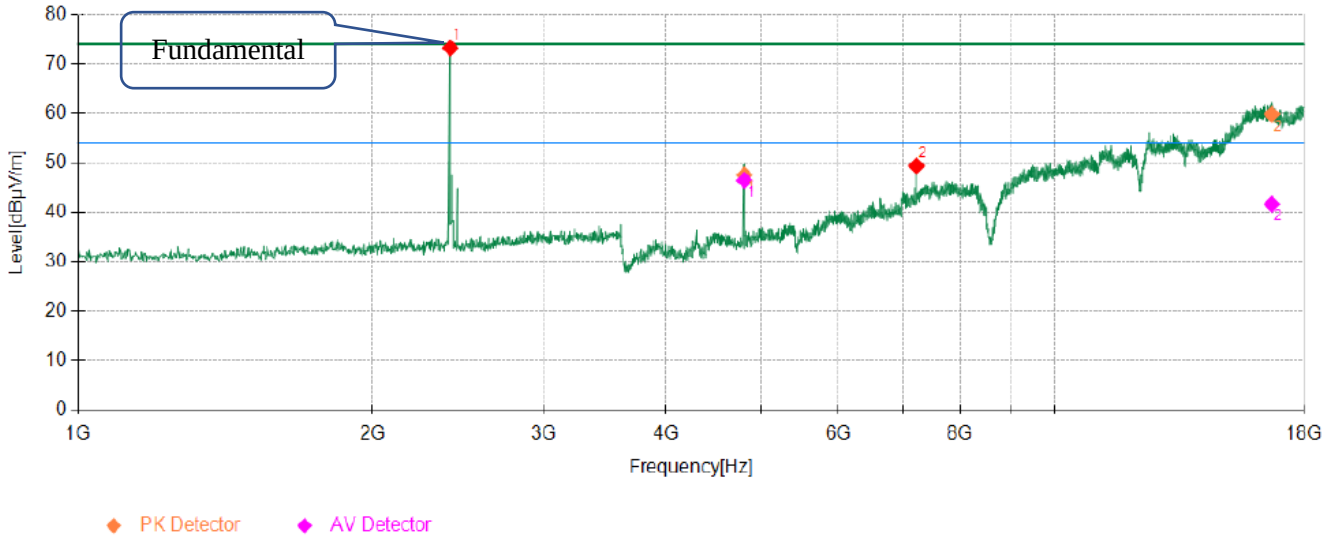
****Note:*
1. Level [dBµV/m] = Reading [dBµV] + Factor [dB/m]
2. Margin [dB] = Limit [dBµV/m] - Level [dBµV/m]

Frequency	Level	Peak Limit	Margin	Duty cycle factor	Average value	Limit	Margin	Polarization
(MHz)	(dBuV/m)	(dBuV/m)	(dB)		(dBuV/m)	(dBuV/m)	(dB)	
2404.625	73.75	114	40.25	-7.75	66	94	28	Horizontal

Note:
1. *Peak Margin [dB] = Peak Limit [dBµV/m] - Peak Level [dBµV/m]*
2. *Average value [dBµV/m] = Peak Level [dBµV/m] + Duty cycle factor [dB]*
3. *Average Margin [dB] = Average Limit [dBµV/m] - Average Level [dBµV/m]*

EIRP = Level[dB µV/m] -95.2 = -29.2 dBm

Vertical



Suspected Data List									
NO.	Freq. [MHz]	Level [dBµV/m]	Reading [dBµV]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2404.625	73.19	83.68	-10.49	74.00	0.81	150	345	Vertic
2	7215.625	49.39	42.96	6.43	74.00	24.61	150	360	Vertic

PK Final Data List									
NO.	Freq. [MHz]	PK Reading [dBµV]	Factor [dB]	PK Value [dBµV/m]	PK Limit [dBµV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4810.12	49.21	-1.67	47.54	74.00	26.46	150	117	Vertical
2	16678.2	38.79	21.02	59.81	74.00	14.19	150	356	Vertical

AV Final Data List									
NO.	Freq. [MHz]	AV Reading [dBµV]	Factor [dB]	AV Value [dBµV/m]	AV Limit [dBµV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4810.12	48.13	-1.67	46.46	54.00	7.54	150	117	Vertical
2	16678.2	20.63	21.02	41.65	54.00	12.35	150	356	Vertical

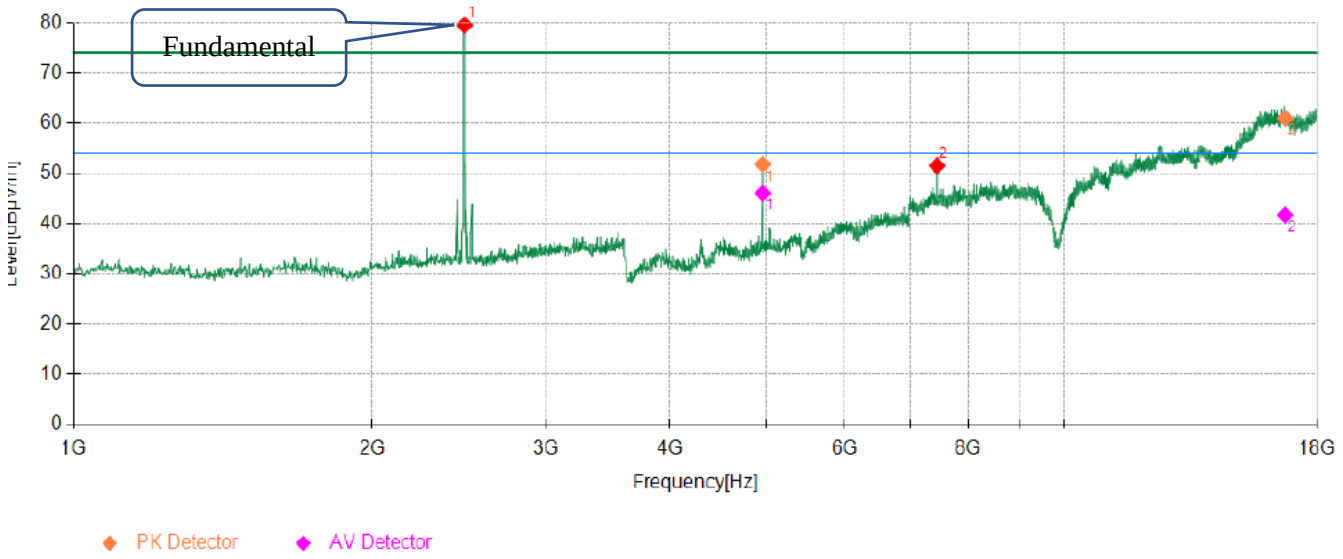
****Note:*
1. Level [dBµV/m] = Reading [dBµV] + Factor [dB/m]
2. Margin [dB] = Limit [dBµV/m] - Level [dBµV/m]

Frequency	Level	Peak Limit	Margin	Duty cycle factor	Average value	Limit	Margin	Polarization
(MHz)	(dBuV/m)	(dBuV/m)	(dB)		(dBuV/m)	(dBuV/m)	(dB)	
2405.625	73.19	114	40.81	-7.75	65.44	94	28.56	Vertical

Note:
1. *Peak Margin [dB] = Peak Limit [dBµV/m] - Peak Level [dBµV/m]*
2. *Average value [dBµV/m] = Peak Level [dBµV/m] + Duty cycle factor [dB]*
3. *Average Margin [dB] = Average Limit [dBµV/m] - Average Level [dBµV/m]*

EIRP = Level[dB µV/m] -95.2 = -29.76 dBm

Above 1GHz (High Channel)
Horizontal



Suspected Data List									
NO.	Freq. [MHz]	Level [dBµV/m]	Reading [dBµV]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2481.125	79.49	89.83	-10.34	74.00	-5.49	150	356	Horizo
2	7440.875	51.49	43.91	7.58	74.00	22.51	150	358	Horizo

PK Final Data List									
NO.	Freq. [MHz]	PK Reading [dBµV]	Factor [dB]	PK Value [dBµV/m]	PK Limit [dBµV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4961	52.9	-1.10	51.80	74.00	22.20	150	348	Horizontal
2	16708	39.91	21.01	60.92	74.00	13.08	150	197	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	AV Reading [dBµV]	Factor [dB]	AV Value [dBµV/m]	AV Limit [dBµV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4961	47.14	-1.10	46.04	54.00	7.96	150	348	Horizontal
2	16708	20.69	21.01	41.70	54.00	12.30	150	197	Horizontal

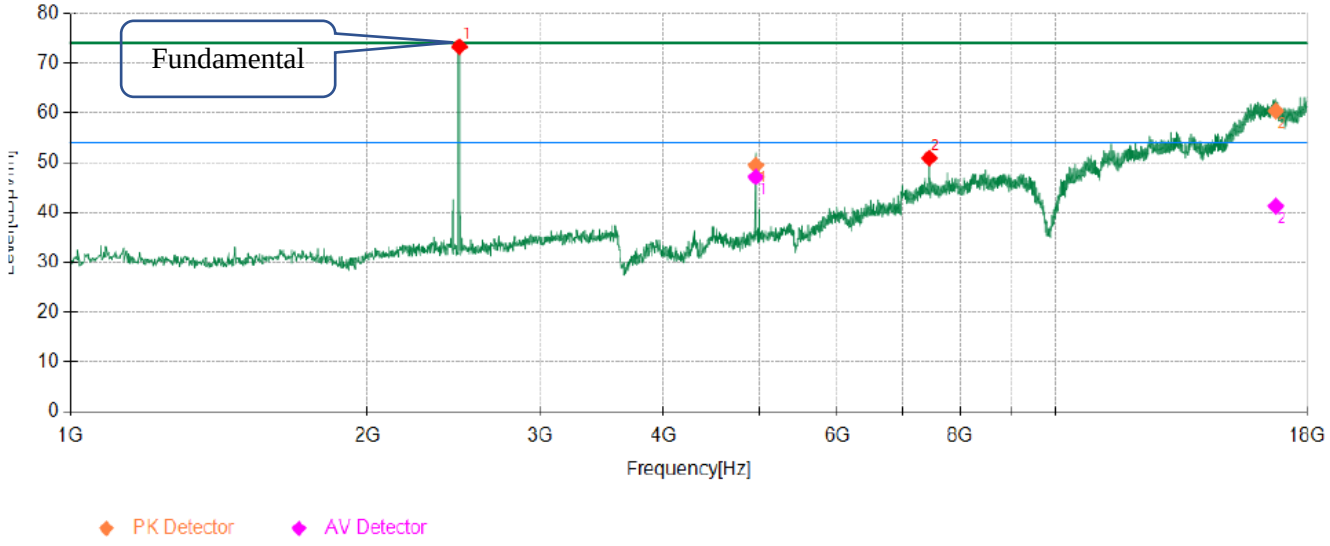
****Note:*
1. Level [dBµV/m] = Reading [dBµV] + Factor [dB/m]
2. Margin [dB] = Limit [dBµV/m] - Level [dBµV/m]

Frequency	Level	Peak Limit	Margin	Duty cycle factor	Average value	Limit	Margin	Polarization
(MHz)	(dBuV/m)	(dBuV/m)	(dB)		(dBuV/m)	(dBuV/m)	(dB)	
2481.125	79.49	114	34.51	-7.83	71.66	94	22.34	Horizontal

Note:
1. *Peak Margin [dB] = Peak Limit [dBµV/m] - Peak Level [dBµV/m]*
2. *Average value [dBµV/m] = Peak Level [dBµV/m] + Duty cycle factor [dB]*
3. *Average Margin [dB] = Average Limit [dBµV/m] - Average Level [dBµV/m]*

EIRP = Level[dB µV/m] -95.2 = -23.54 dBm

Vertical



Suspected Data List									
NO.	Freq. [MHz]	Level [dBµV/m]	Reading [dBµV]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2481.125	73.25	83.59	-10.34	74.00	0.75	150	301	Vertic
2	7440.875	50.92	43.34	7.58	74.00	23.08	150	347	Vertic

PK Final Data List									
NO.	Freq. [MHz]	PK Reading [dBµV]	Factor [dB]	PK Value [dBµV/m]	PK Limit [dBµV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4961	50.62	-1.10	49.52	74.00	24.48	150	132	Vertical
2	16727.1	39.37	21.00	60.37	74.00	13.63	150	166	Vertical

AV Final Data List									
NO.	Freq. [MHz]	AV Reading [dBµV]	Factor [dB]	AV Value [dBµV/m]	AV Limit [dBµV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4961	48.25	-1.10	47.15	54.00	6.85	150	132	Vertical
2	16727.1	20.31	21.00	41.31	54.00	12.69	150	166	Vertical

****Note:*
1. Level [dBµV/m] = Reading [dBµV] + Factor [dB/m]
2. Margin [dB] = Limit [dBµV/m] - Level [dBµV/m]

Frequency	Level	Peak Limit	Margin	Duty cycle factor	Average value	Limit	Margin	Polarization
(MHz)	(dBuV/m)	(dBuV/m)	(dB)		(dBuV/m)	(dBuV/m)	(dB)	
2481.125	73.25	114	40.75	-7.83	65.42	94	28.58	Vertical

Note:
1. *Peak Margin [dB] = Peak Limit [dBµV/m] - Peak Level [dBµV/m]*
2. *Average value [dBµV/m] = Peak Level [dBµV/m] + Duty cycle factor [dB]*
3. *Average Margin [dB] = Average Limit [dBµV/m] - Average Level [dBµV/m]*

EIRP = Level[dB µV/m] -95.2 = -29.78 dBm

Notes:

1. *Measuring frequencies from 9 KHz - 10th harmonic or 26.5GHz (which is less), No emission found between lowest internal used/generated frequency to 30MHz.*
2. *Radiated emissions measured in frequency range from 9 KHz ~10th harmonic or 26.5GHz (which is less) were made with an instrument using Peak detector mode.*
3. *Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
4. *Measured = Reading + Ant. Fac - Pre. Fac. + Cab. Loss; Margin = Limit - Measured*

5.4 Power line conducted emissions

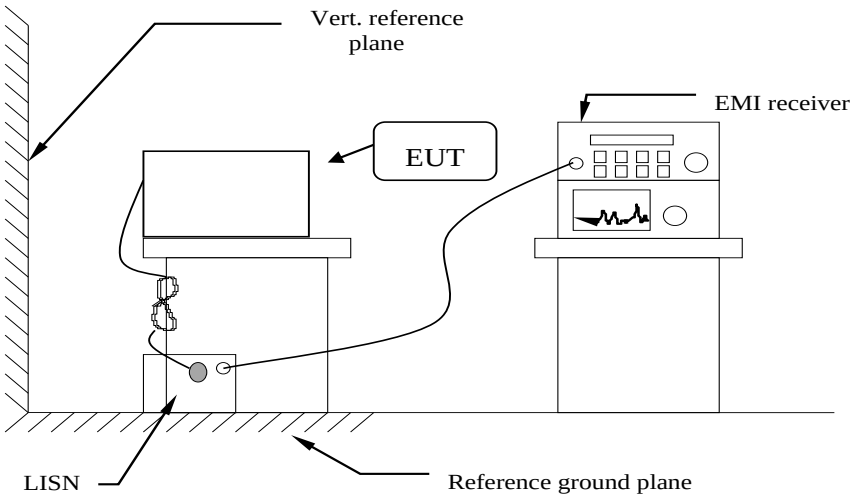
5.4.1 Standard Applicable

According to §15.207 (a): For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range are listed as follows:

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

* Decreasing linearly with the logarithm of the frequency

5.4.2 Block Diagram of Test Setup



Note: the distance between LISN and Vertical reference plane is 40 cm and the distance between LISN and EUT is 80 cm.

5.4.3 Test Results

N/A

5.5 Antenna Requirements

5.5.1 Standard Applicable

According to antenna requirement of §15.203.

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 re-placed by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

5.5.2 Antenna Connected Construction

5.5.3 Standard Applicable

According to § 15.203, 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.

5.5.4 Antenna Connector Construction

The antenna is a Internal antenna connect to PCB board and no consideration of replacement. Please see EUT photo for details.

5.5.5 Results: Compliance.

6 LIST OF MEASURING EQUIPMENTS

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
1	MXA Signal Analyzer	Keysight	N9020A	MY52091623	2024/1/4	2025/1/3
2	Power Sensor	Agilent	U2021XA	MY5365004	2024/1/4	2025/1/3
3	Power Meter	Agilent	U2531A	TW53323507	2024/1/4	2025/1/3
4	Loop Antenna	schwarzbeck	FMZB1519 B	00023	2022/11/13	2025/11/12
5	Wideband Antenna	schwarzbeck	VULB 9163	958	2022/11/13	2025/11/12
6	Horn Antenna	schwarzbeck	BBHA 9120D	01989	2022/11/13	2025/11/12
7	EMI Test Receiver	R&S	ESCI	100849/003	2024/1/4	2025/1/3
8	Controller	MF	MF7802	N/A	N/A	N/A
9	Amplifier	schwarzbeck	BBV 9743	209	2024/1/4	2025/1/3
10	Amplifier	Tonscend	TSAMP-05 18SE	--	2024/1/4	2025/1/3
11	RF Cable(below 1GHz)	HUBER+SUHNER	RG214	N/A	2024/1/4	2025/1/3
12	RF Cable(above 1GHz)	HUBER+SUHNER	RG214	N/A	2024/1/4	2025/1/3
12	Artificial Mains	ROHDE & SCHWARZ	ENV 216	101333-IP	2024/1/4	2025/1/3
14	EMI Test Software	ROHDE & SCHWARZ	ESK1	V1.71	N/A	N/A
15	RE test software	Tonscend	JS32-RE	V5.0.0.0	N/A	N/A
16	Test Software	Tonscend	JS1120-3	V3.2.22	N/A	N/A
17	Horn Antenna	A-INFO	LB-180400 -KF	J211020657	2022/10/12	2024/10/11
18	Amplifier	Chengyi	EMC184045SE	980508	2023/9/20	2024/9/19
19	Spectrum Analyzer	R&S	FSP40	100550	2024/1/10	2025/1/10

7 TEST SETUP PHOTOGRAPHS OF EUT

Please refer to separated files for Test Setup Photos of the EUT.

8 EXTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for External Photos of the EUT.

9. INTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for Internal Photos of the EUT.

----------THE END OF REPORT----------