FCC Test Report

Report No.:	CIDG-ESH-P23020103B-2-A1
FCC ID:	2A789SC053
Product:	Smart Camera
Model:	SC053-WQ2, SC053-WQ2A, SC053-WQ2B, SC053-WQ2C, SC053-WQ1, SC053-WQ1A, SC053-WQ1B, SC053-WQ1C, SC053-WQ3, SC053-WQ3A, SC053-WQ3B, SC053-WQ3C
Received Date:	Oct.18, 2024
Test Date:	Oct.18 to Oct.31, 2024
Issued Date:	Nov.04, 2024

Applicant:	Ningbo Lingzhu Technology CO., Ltd.
Address:	No.578,Building 7,No.535 Kangqiao South Road, Jiangbei District, Ningbo City, Zhejiang Province, China
Manufacturer:	Ningbo Lingzhu Technology CO., Ltd.
Address:	No.578,Building 7,No.535 Kangqiao South Road, Jiangbei District, Ningbo City, Zhejiang Province, China
Issued By:	BUREAU VERITAS ADT (Shanghai) Corporation
Lab Address:	No. 829, Xinzhuan Road, Shanghai, P.R.China (201612)
FCC Registration / Designation Number:	176467/ CN1213

ACCREDITED
Test Lab
Cert 2343.01

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Release Control Record

Issue No.	Description	Date Issued
CIDG-ESH-P23020103B-2	Original release	Mar.08, 2023
CIDG-ESH-P23020103B-2-A1	Updating charging port form Micro USB to Type-C and updating new antenna	Nov.04, 2024

1 Certificate of Conformity

Product: Smart Camera

Brand: --

Model: SC053-WQ2, SC053-WQ2A, SC053-WQ2B, SC053-WQ2C, SC053-WQ1, SC053-WQ1A, SC053-WQ1B, SC053-WQ1C, SC053-WQ3, SC053-WQ3A, SC053-WQ3B, SC053-WQ3C

Applicant: Ningbo Lingzhu Technology CO., Ltd.

Test Date: Oct.18 to Oct.31, 2024

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10:2020

The above equipment has been tested by **BUREAU VERITAS ADT (Shanghai) Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : Yuan Zhang , **Date:** Nov.04, 2024

Yuan ZHANG

Project Engineer

Approved by : Sean Yu , **Date:** Nov.04, 2024

Sean YU

RF Supervisor

BV ADT (SHANGHAI) CORPORATION 布威德检测技术(上海)有限公司 E&E报告专用章

2 Summary of Test Results

The EUT has been tested according to the following specifications:

47 CFR FCC Part 15, Subpart C (SECTION 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit.
15.205 / 15.209 / 15.247(d)	Radiated Emissions Measurement	PASS	Meet the requirement of limit.

Special Comments: This report is based on history report CIDG-ESH-P23020103B-2 for updating charging port form Micro USB to Type-C and updating new antenna. The type of antenna is same while the antenna gain becomes smaller. After evaluation, we choose model SC053-WQ2B to apply Radiated Emissions Measurement test. All other test results refer to history report CIDG-ESH-P23020103B-2.

2.1 Test Instruments

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Loop Antenna	ETS-LINDGREN	6502	E1A1039	Jul.30,24	Jul.29,26
Hybrid Antenna(25MHz-1.5GHz)	Schwarzbeck	VULB9168	E1A1001	Mar.28,24	Mar.27,26
Horn Antenna(1GHz -18GHz)	Schwarzbeck	BBHA9120D	E1A1017	Jul.31,24	Jul.30,26
Double Ridge Horn Antenna(18G-40G)	COM-POWER	AH-840	E1A1040	Jul.31,24	Jul.30,26
Pre-Amplifier(100kHz-1.3GHz)	Agilent	8447D	E1A2001	Feb.18,24	Feb.17,25
Pre-Amplifier(0.5GHz-18GHz)	EMCI	EMC184045SE	E1A2009	Jul.02,24	Jul.01,25
Pre-Amplifier(18GHz-40GHz)	EMCI	EMC051845SE	E1A2008	Aug.15,24	Aug.14,25
EMI test recerver	R&S	ESR26	E1R1005	Sep.03,24	Sep.02,25
Spectrum Analyzer	Keysight	N9020A	E1S1004	Feb.19,24	Feb.18,25
EMI test recerver	R&S	ESR3	E1R1008	May.31, 24	May.30, 25
LISN	R&S	ENV216	E1L1011	Aug.12, 24	Aug.11, 25
Humidity&Temp Tester	ESPEC	SE TH-Z-042U	C1TH002	Jun.04,24	Jun.03,25
RF Control Unit	Toscend	JS0806-2	E1C5003	N/A	N/A
Test Software	Toscend	JS32-CE	N/A	N/A	N/A
Test Software	Toscend	JS32-RE	N/A	N/A	N/A
Test Software	Toscend	JS1120	N/A	N/A	N/A
Test Software	Toscend	JS1120-3	N/A	N/A	N/A

2.2 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT:

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.56 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	4.86 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	4.96 dB
	18GHz ~ 40GHz	3.30 dB

2.3 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Smart Camera
Brand	--
Model	SC053-WQ2, SC053-WQ2A, SC053-WQ2B, SC053-WQ2C, SC053-WQ1, SC053-WQ1A, SC053-WQ1B, SC053-WQ1C, SC053-WQ3, SC053-WQ3A, SC053-WQ3B, SC053-WQ3C
Difference	sensor, color and tiny enclosure difference, such as different chamfering These differences are not related to the radio frequency function. 1, 2, 3 in model name for different sensor and A, B, C in model name for different color and tiny enclosure difference.
Power Rating	DC 5V 1A
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Operating Frequency	2412MHz ~ 2462MHz
Number of Channel	802.11b, 802.11g and 802.11n (HT20):11
Output Power	15.21dBm
Antenna Type	FPC Antenna
Antenna Connector	--
Antenna Gain	3.42dBi

Note:

1. For more details, please refer to the User's manual of the EUT.

Modulation Mode	TX /RX Function
802.11b	1TX / 1RX
802.11g	1TX / 1RX
802.11n (HT20)	1TX / 1RX

3.2 Description of Test Modes

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20).

Channel	Frequency	Channel	Frequency
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz	-	-

3.2.1 Test Mode Applicability:

EUT Configure Mode	Applicable to				Description
	RE ≥ 1G	RE < 1G	PLC	APCM	
-	√	√	√	-	-

Where **RE≥1G:** Radiated Emission above 1GHz **RE< 1G:** Radiated Emission below 1GHz

PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

Radiated Emission Test (Above 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5

Radiated Emission Test (Below 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1	DSSS	DBPSK	1.0

Power Line Conducted Emission Test:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1	DSSS	DBPSK	1.0

3.2.2 Test Condition:

Applicable to	Normal Environmental Conditions	Normal Input Power
RE ≥ 1G	23deg. C, 58%RH	Powered by battery
RE < 1G	23deg. C, 58%RH	Powered by battery
PLC	23deg. C, 58%RH	DC 5V 1A

3.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

NO.	PRODUCT	BRAND/ Manufacturer	MODEL NO.
1	AC/DC Adapter	--	KA06E-0501000EU
2.	Laptop	Lenovo	L470

3.4 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standard:

FCC Part 15, Subpart C (15.247)

KDB 558074 D01 DTS Meas Guidance v05r02

ANSI C63.10:2013

All relaxed test items have been performed and recorded as per the above standard.

4 Test Procedure and Results

4.1 AC Power Conducted Emission

4.1.1 Limits

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.1.2 Test Procedures

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

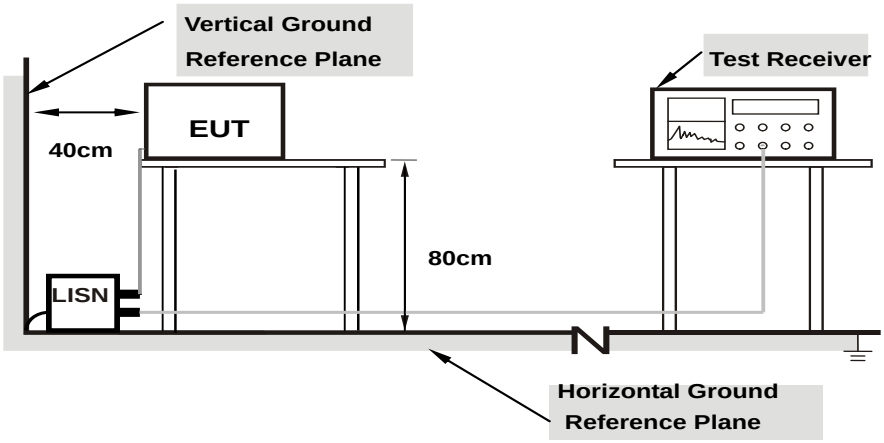
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.1.3 Deviation from Test Standard

No deviation.

4.1.4 Test Setup



Note: 1.Support units were connected to second LISN.

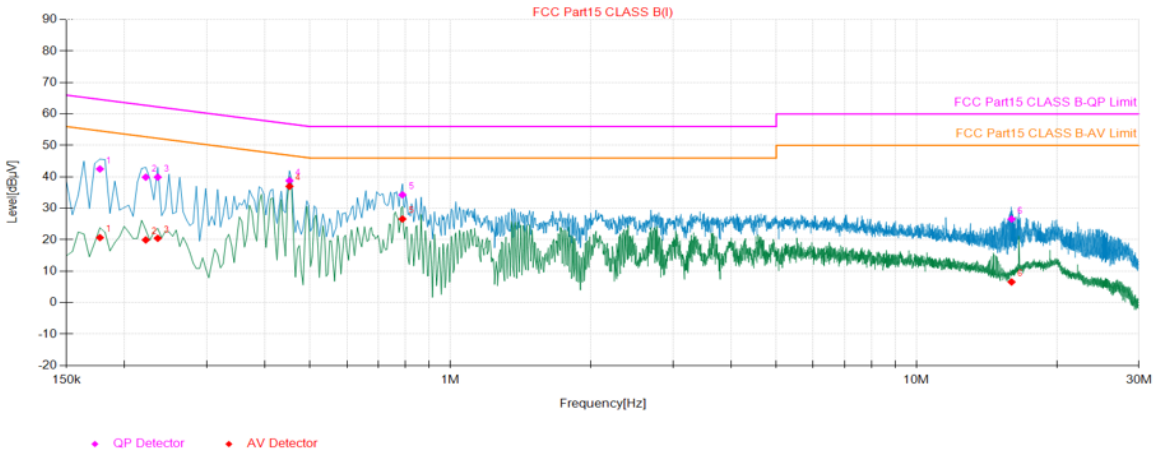
For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.5 EUT Operating Conditions

Same as 4.1.6.

4.1.6 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Power supply	AC 120V, 60Hz		
Test Mode	Charging and Working		



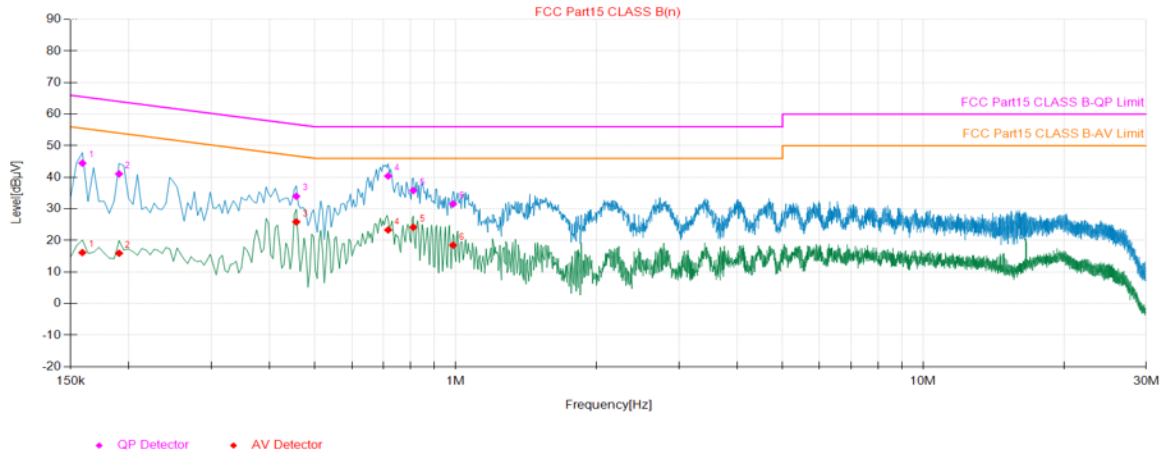
Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.18	9.69	32.81	42.50	64.63	22.13	10.98	20.67	54.63	33.96
2	0.22	9.63	30.27	39.90	62.74	22.84	10.31	19.94	52.74	32.80
3	0.24	9.59	30.32	39.91	62.25	22.34	10.88	20.47	52.25	31.78
4	0.45	9.49	29.30	38.79	56.85	18.06	27.51	37.00	46.85	9.85
5	0.79	9.37	24.93	34.30	56.00	21.70	17.23	26.60	46.00	19.40
6	15.99	9.89	16.68	26.57	60.00	33.43	-3.32	6.57	50.00	43.43

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Limit value - Emission level
4. Correction factor = Insertion loss + Cable loss
5. QP/AV Value= QP/AV Reading Value+ Correction factor

Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Power supply	AC 120V, 60Hz		
Test Mode	Charging and Working		



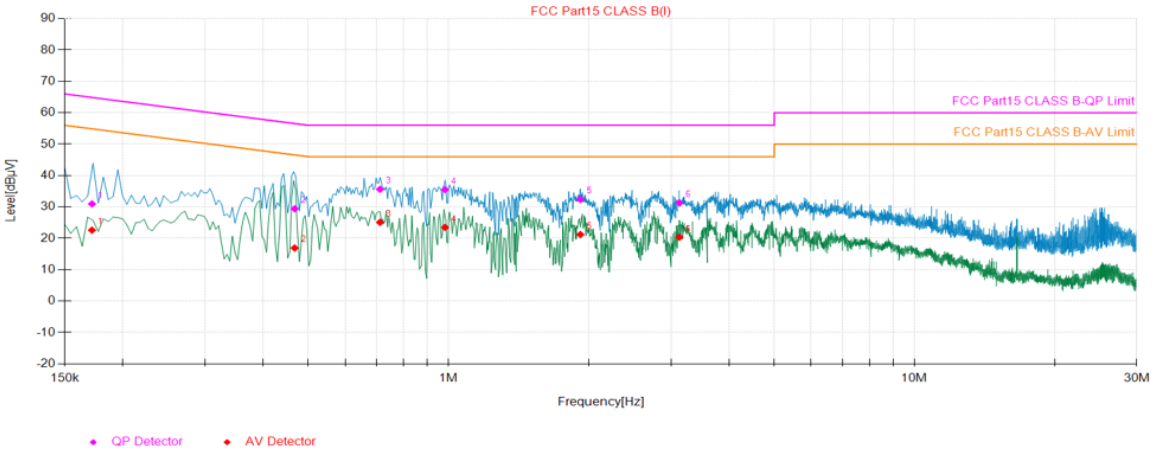
Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	9.66	34.81	44.47	65.52	21.05	6.50	16.16	55.52	39.36
2	0.19	9.68	31.39	41.07	64.01	22.94	6.26	15.94	54.01	38.07
3	0.46	9.48	24.50	33.98	56.77	22.79	16.39	25.87	46.77	20.90
4	0.72	9.40	30.99	40.39	56.00	15.61	13.92	23.32	46.00	22.68
5	0.81	9.29	26.52	35.81	56.00	20.19	14.88	24.17	46.00	21.83
6	0.99	9.41	22.14	31.55	56.00	24.45	9.07	18.48	46.00	27.52

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Limit value - Value level
4. Correction factor = Insertion loss + Cable loss
5. QP/AV Value= QP/AV Reading Value+ Correction factor

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Power supply	AC 230V, 50Hz		
Test Mode	Charging and Working		



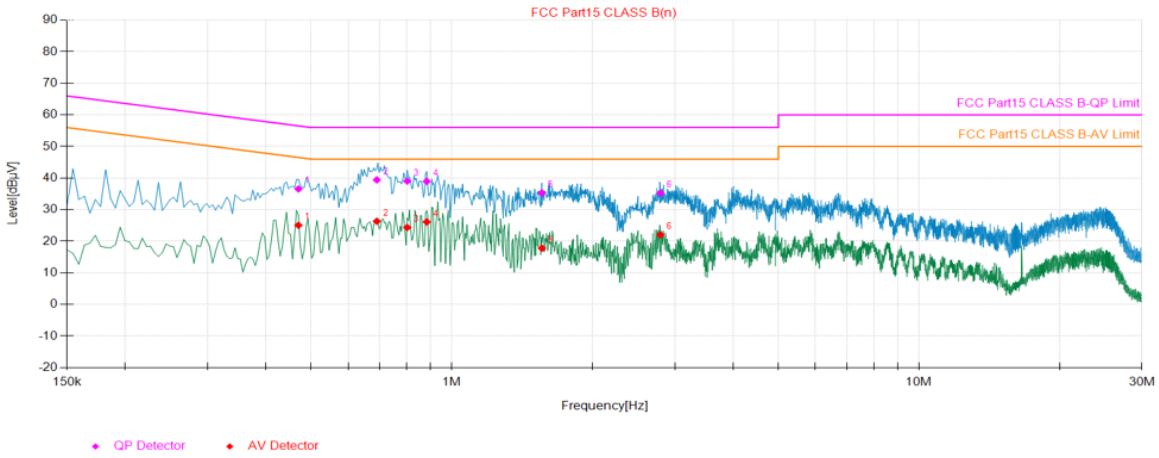
Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.17	9.70	21.26	30.96	64.88	33.92	12.89	22.59	54.88	32.29
2	0.47	9.50	19.91	29.41	56.56	27.15	7.40	16.90	46.56	29.66
3	0.71	9.46	26.16	35.62	56.00	20.38	15.63	25.09	46.00	20.91
4	0.98	9.41	26.09	35.50	56.00	20.50	14.06	23.47	46.00	22.53
5	1.92	9.57	22.81	32.38	56.00	23.62	11.62	21.19	46.00	24.81
6	3.13	9.66	21.65	31.31	56.00	24.69	10.67	20.33	46.00	25.67

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Limit value - Emission level
4. Correction factor = Insertion loss + Cable loss
5. QP/AV Value= QP/AV Reading Value+ Correction factor

Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Power supply	AC **23**0V, **5**0Hz		
Test Mode	Charging and Working		



Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.47	9.48	27.08	36.56	56.52	19.96	15.57	25.05	46.52	21.47
2	0.69	9.43	30.00	39.43	56.00	16.57	16.91	26.34	46.00	19.66
3	0.80	9.28	29.74	39.02	56.00	16.98	15.07	24.35	46.00	21.65
4	0.88	9.34	29.61	38.95	56.00	17.05	16.77	26.11	46.00	19.89
5	1.56	9.53	25.79	35.32	56.00	20.68	8.25	17.78	46.00	28.22
6	2.80	9.68	25.56	35.24	56.00	20.76	12.34	22.02	46.00	23.98

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Limit value - Value level
4. Correction factor = Insertion loss + Cable loss
5. QP/AV Value= QP/AV Reading Value+ Correction factor

4.2 Radiated Emission Measurement

4.2.1 Limits

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, 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.

4.2.2 Test Procedures

For Radiated emission below 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degree to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. Both X and Y axes of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and the rotate table was turned from 0 degree to 360 degree to find the maximum reading.

e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

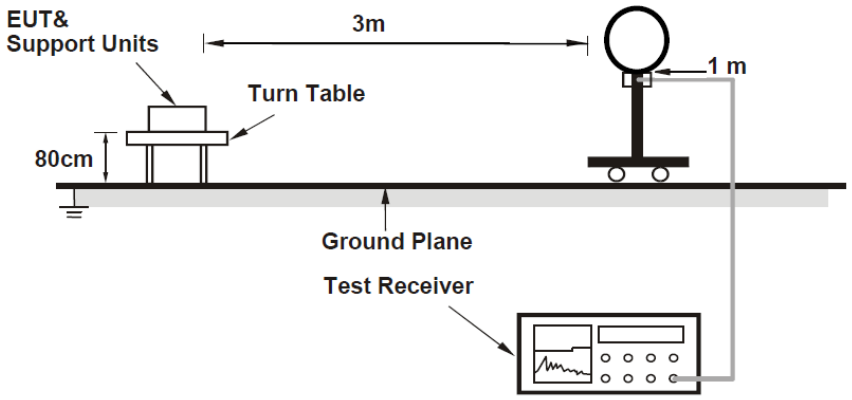
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz & 360 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1/T for RMS Average (Duty cycle < 98 %) for Peak detection at frequency above 1 GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz (Duty cycle ≥ 98 %) for Average detection (AV) at frequency above 1 GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.2.3 Deviation from Test Standard

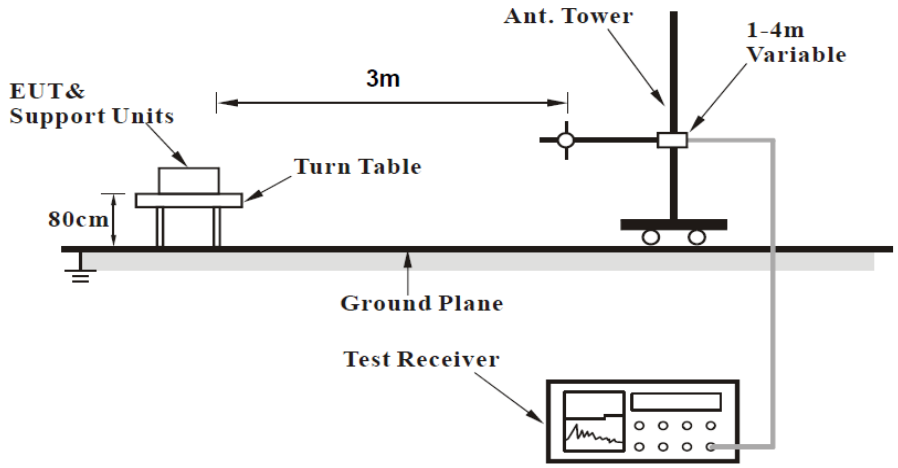
No deviation.

4.2.4 Test Setup

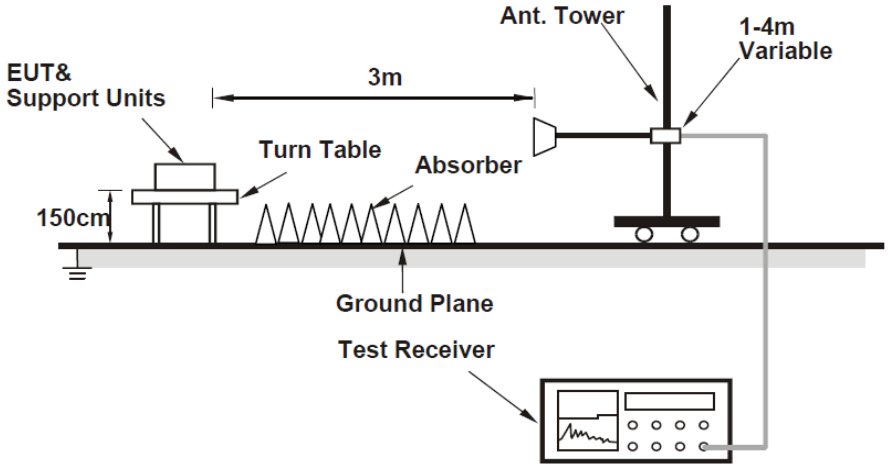
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.5 EUT Operating Conditions

a. Placed the EUT on a testing table.

b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

4.2.6 Test Results

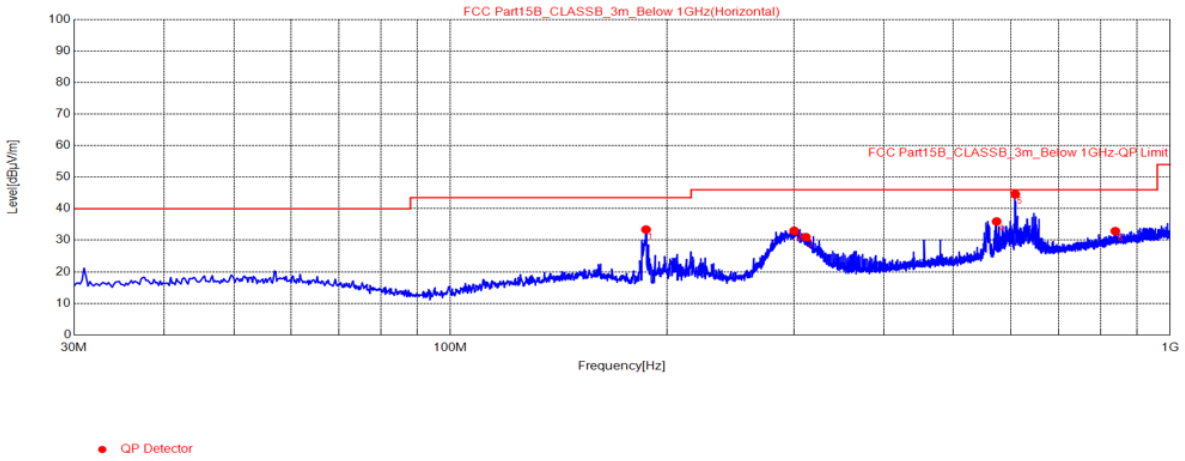
Radiated Emissions Range 9kHz~30MHz

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

Radiated Emissions Range 30MHz~1GHz

Below is the worst test data

Channel	11b_2412_Ant1	**Detector Function**	Quasi-Peak (QP)
Frequency Range	30MHz ~ 1GHz	**Antenna Polarity**	Horizontal
Power supply	Powered by battery		



Final Data List

NO.	Freq.[MHz]	Reading [dBµV]	Factor [dB]	Value [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle[°]	Polarity
1	186.95	45.13	-11.74	33.39	43.50	10.11	QP	194	93	Horizontal
2	300.24	41.26	-8.26	33.00	46.00	13.00	QP	105	237	Horizontal
3	311.69	39.03	-8.03	31.00	46.00	15.00	QP	167	235	Horizontal
4	573.98	38.68	-2.73	35.95	46.00	10.05	QP	142	118	Horizontal
5	609.09	46.16	-1.58	44.58	46.00	1.42	QP	108	108	Horizontal
6	838.98	30.23	2.67	32.90	46.00	13.10	QP	164	39	Horizontal

REMARKS:

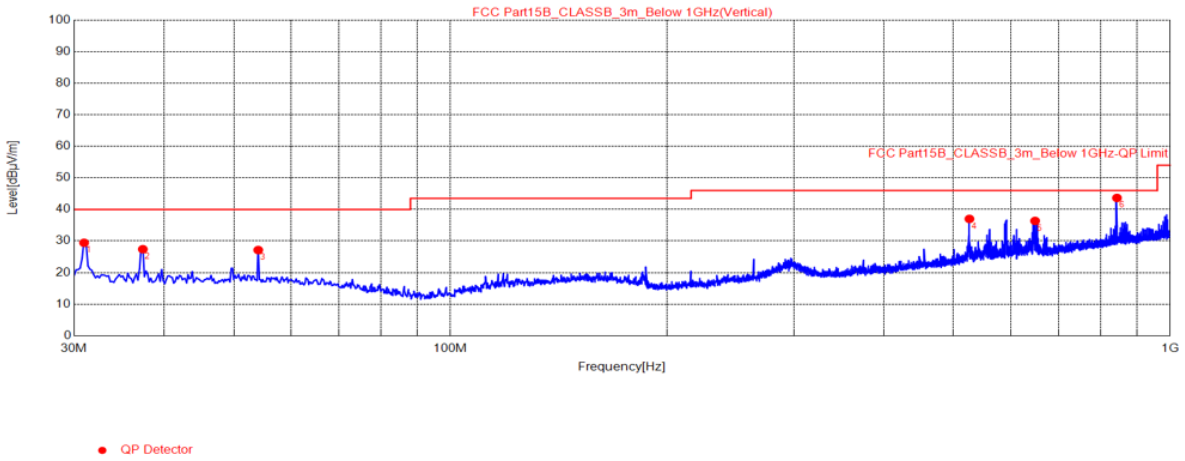
1. Emission Level(dBuV/m) = Spectrum reading (dBuV) + Correction Factor(dB/m)

2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)

3. The other emission levels were very low against the limit.

4. Margin value = Limit value – Emission Level

Channel	11b_2412_Ant1	**Detector Function**	Quasi-Peak (QP)
Frequency Range	30MHz ~ 1GHz	**Antenna Polarity**	Vertical
Power supply	Powered by battery		



Final Data List

NO.	Freq.[MHz]	Reading [dBµV]	Factor [dB]	Value [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle[°]	Polarity
1	30.97	41.49	-12.05	29.44	40.00	10.56	QP	194	24	Vertical
2	37.37	38.86	-11.46	27.40	40.00	12.60	QP	155	12	Vertical
3	54.06	37.5	-10.36	27.14	40.00	12.86	QP	121	92	Vertical
4	526.06	40.71	-3.70	37.01	46.00	8.99	QP	136	147	Vertical
5	649.05	37.41	-1.04	36.37	46.00	9.63	QP	140	125	Vertical
6	843.44	40.78	2.88	43.66	46.00	2.34	QP	174	125	Vertical

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)

2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)

3. The other emission levels were very low against the limit.

4. Margin value = Limit value – Emission Level

Radiated Emission Range 1GHz~10th Harmonic

Below is the worst test data

802.11b

Channel	TX Channel 1	**Detector Function**	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Correction Factor (dB/m)**	**Antenna Polarity**	**Detector**
1	4823.30	48.35	74.00	25.65	-2.99	H	PK
2	4823.30	43.20	54.00	10.80	-2.99	H	AV
3	4823.30	49.01	74.00	24.99	-2.99	V	PK
4	4823.30	43.97	54.00	10.03	-2.99	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level

Channel	TX Channel 6	**Detector Function**	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Correction Factor (dB/m)**	**Antenna Polarity**	**Detector**
1	4874.30	49.02	74.00	24.98	-2.88	H	PK
2	4874.30	42.25	54.00	11.75	-2.88	H	AV
3	4874.30	49.84	74.00	24.16	-2.88	V	PK
4	4874.30	43.78	54.00	10.22	-2.88	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level

Channel	TX Channel 11	**Detector Function**	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Correction Factor (dB/m)**	**Antenna Polarity**	**Detector**
1	4923.60	47.68	74.00	26.32	-2.72	H	PK
2	4923.60	43.04	54.00	10.96	-2.72	H	AV
3	4923.60	50.41	74.00	23.59	-2.72	V	PK
4	4923.60	45.80	54.00	8.20	-2.72	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value =Limit value – Emission Level

802.11g

Channel	TX Channel 1	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	4823.30	46.46	74.00	27.54	-2.99	H	PK
2	4823.30	37.86	54.00	16.14	-2.99	H	AV
3	4823.30	47.22	74.00	26.78	-2.99	V	PK
4	4823.30	40.07	54.00	13.93	-2.99	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level

Channel	TX Channel 6	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	4874.30	46.75	74.00	27.25	-2.88	H	PK
2	4874.30	38.79	54.00	15.21	-2.88	H	AV
3	4874.30	48.17	74.00	25.83	-2.88	V	PK
4	4874.30	41.68	54.00	12.32	-2.88	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value =Limit value – Emission Level

Channel	TX Channel 11	**Detector Function**	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Correction Factor (dB/m)**	**Antenna Polarity**	**Detector**
1	4925.30	46.66	74.00	27.34	-2.72	H	PK
2	4925.30	38.27	54.00	15.73	-2.72	H	AV
3	4925.30	49.24	74.00	24.76	-2.72	V	PK
4	4925.30	40.65	54.00	13.35	-2.72	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level

802.11n (HT20)

Channel	TX Channel 1	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	4823.30	46.47	74.00	27.53	-2.99	H	PK
2	4823.30	38.89	54.00	15.11	-2.99	H	AV
3	4823.30	48.17	74.00	25.83	-2.99	V	PK
4	4823.30	39.82	54.00	14.18	-2.99	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level

Channel	TX Channel 6	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	4874.30	46.50	74.00	27.50	-2.88	H	PK
2	4874.30	38.58	54.00	15.42	-2.88	H	AV
3	4874.30	47.47	74.00	26.53	-2.88	V	PK
4	4874.30	39.78	54.00	14.22	-2.88	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value =Limit value – Emission Level

Channel	TX Channel 11	**Detector Function**	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Correction Factor (dB/m)**	**Antenna Polarity**	**Detector**
1	4925.30	45.67	74.00	28.33	-2.72	H	PK
2	4925.30	37.55	54.00	16.45	-2.72	H	AV
3	4925.30	49.50	74.00	24.50	-2.72	V	PK
4	4925.30	40.03	54.00	13.97	-2.72	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level

5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

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