

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						
	IBC-MRA ACCREDITED Test Lab Cert 2343.01						
http://www.bureauveritas.com/home/abou of this report to or for any other person or findings solely with respect to the test s characteristics of the lotfrom which a tes of the tests requested by you and the re request for accredited tests. Statements otherwise requested in writing. You have if you require measurement uncertainty;	orporates by reference, the Conditions of Testing as posted at the date of issuance of this report at it-us/our-business/cps/about-us/terms-conditions/ and is intended for your exclusive use. Any copying or replication entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our samples identified herein. The results set forth in this report are not indicative or representative of the quality or t sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all sults thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A ribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the						

Report No.: CIDG-ESH-P23020103B-2-A1

Report Format Version: 6.1.1



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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 Co	nformity							
Product:	Smart Camera							
Brand:								
Model:	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							
compliance with the re Test (EUT) configurat	t has been tested by BUREAU VERITAS ADT (Shanghai) Corporation , and found equirement of the above standards. The test record, data evaluation & Equipment Under ions represented herein are true and accurate accounts of the measurements of the teristics under the conditions specified in this report.							
Prepared by :	Yuan Zhang, Date: Nov.04, 2024 Yuan ZHANG Project Engineer							
Approved by :	CORPORT CORPORT Secn の Secn の RF Supervisor RF Supervisor E 派 日本 Secn の RF Supervisor							



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
Radiated Emissions above 1 GHZ	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			Applic	able to				
Configure Mode	RE≥1G		RE < 1G	PLC	AP	СМ	Description	
-	√		\checkmark	\checkmark	-		-	
Where RE>1G: Radiated Emission above 1GHz RE<1G: Radiated Emission below 1GHz PLC: Power Line Conducted Emission APCM: Antenna Port Conducted Measurement								
_	Emission Test							
Pre-S	Emission Test Scan has been o een available m tecture).	conduc	ted to determi			•		
Pre-S betwe archit	Scan has been o een available m	conduc odulati	ted to determi ons, data rate	s and antenn	a ports (if EUT	with antenna		
 Pre-S betwee archit Follow Et CONF 	Scan has been o een available m tecture).	conduc odulati was (\	ted to determi ons, data rate	s and antenn	a ports (if EUT	with antenna		
 Pre-S betwee archit Follow Et CONF 	Scan has been o een available m tecture). wing channel(s) UT IGURE MOD	conduc odulatio was (\ E	ted to determi ons, data rate were) selected AVAILABLE	s and antenna d for the final t TESTED	a ports (if EUT est as listed b	with antenna elow. MODULATION	diversity DATA RATE	

Radiated Emission Test (Below 1 GHz):

-

802.11n (HT20)

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).

1, 6, 11

OFDM

BPSK

6.5

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

1 to 11

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

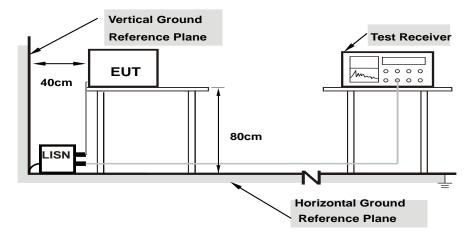
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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 Worl	king	
90		FCC Part15 CLASS B(I)	
80 -			
70			FCC Part15 CLASS B-QP Limit
50			FCC Part15 CLASS B-AV Limit
	AW NYM Man W Repairing	What is an appreter of the property and the second and	Westernest and and the states
		MAN WAANA MANAMANA	Mary and
0 <u>-</u>	i i i i illi illi	· · · · · · ·	March .
-10			
-20	1M		10M 30
		Frequency[Hz]	
QP Detector	AV Detector		

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

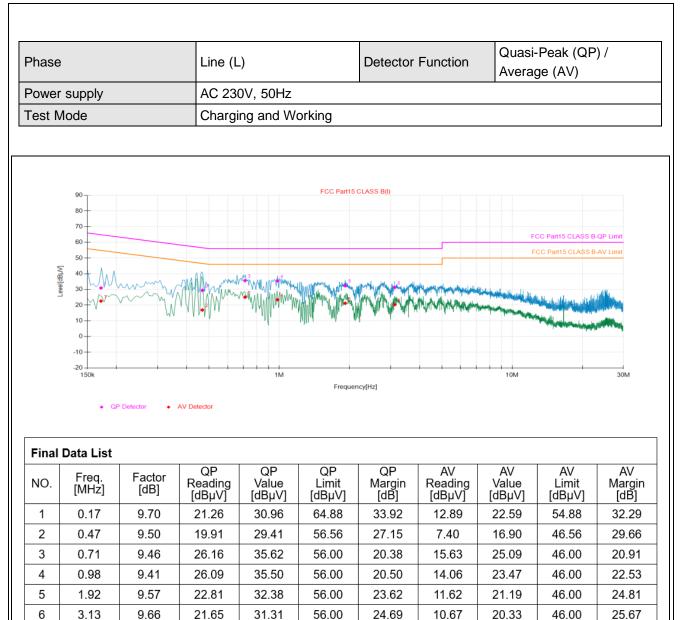
- 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
- 2. The emission levels of other frequencies were very low against the limit.
- 3. Margin value = Limit value Emission level
- 4. Correction factor = Insertion loss + Cable loss
- 5. QP/AV Value= QP/AV Reading Value+ Correction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



hase			Neutral (N)		Detector F	Function		-Peak (QP ge (AV))/
ower	supply		AC 120V	, 60Hz						
est M	ode		Charging	and Worl	king					
5	90 80 70 60 50			A*	FCC Part15	CLASS B(n)			CC Part15 CLASS B- CC Part15 CLASS B-	
L avvel (refs. M)			M M M M M M M M M M M M M M M M M M M		Yollow Manager		A.A.M.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A			
L avveil (dBs	20 10 -10 -20 150k		M M M M M M		Freque	ncy[Hz]	n n n n n n n n n n n n n n n n n n n	10M		Зом
	20 10 -10 -20 150k	Petector Factor [dB]	AV Detector	QP Value	QP Limit	QP Margin	AV Reading [dBµV]	AV Value	AV Limit [dBµV]	AV Margin
Final	20 10 -10 -20 150k • GP Data List Freq.	Factor	QP	QP	QP	QP		AV	AV Limit [dBµV] 55.52	AV
Final NO.	Data List Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	Reading [dBµV]	AV Value [dBµV]	Limit [dBµV]	AV Margin [dB]
Final NO.	20 10 -10 -20 150k • OF Data List Freq. [MHz] 0.16	Factor [dB] 9.66	QP Reading [dBμV] 34.81	QP Value [dBµV] 44.47	QP Limit [dBµV] 65.52	QP Margin [dB] 21.05	Reading [dBµV] 6.50	AV Value [dBµV] 16.16	Limit [dBµV] 55.52	AV Margin [dB] 39.36
Final NO. 1 2	20 10 0 -10 -20 150k • OF Data List Freq. [MHz] 0.16 0.19	Factor [dB] 9.66 9.68	QP Reading [dBμV] 34.81 31.39	QP Value [dBμV] 44.47 41.07	QР Limit [dBµV] 65.52 64.01	QP Margin [dB] 21.05 22.94	Reading [dBµV] 6.50 6.26	AV Value [dBμV] 16.16 15.94	Limit [dBµV] 55.52 54.01	AV Margin [dB] 39.36 38.07
Final NO. 1 2 3	20 10 -10 -20 150k * OF Data List Freq. [MHz] 0.16 0.19 0.46	Factor [dB] 9.66 9.68 9.48	QP Reading [dBμV] 34.81 31.39 24.50	QР Value [dBµV] 44.47 41.07 33.98	QP Limit [dBµV] 65.52 64.01 56.77	QP Margin [dB] 21.05 22.94 22.79	Reading [dBµV] 6.50 6.26 16.39	AV Value [dBμV] 16.16 15.94 25.87	Limit [dBµV] 55.52 54.01 46.77	AV Margin [dB] 39.36 38.07 20.90

- 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





- 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
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- 5. QP/AV Value= QP/AV Reading Value+ Correction factor



hase			Neutral (I	N)		Detector F	Function		-Peak (QP ge (AV))/
Power	supply		AC 230V,	, 5 0Hz						
ēst M	lode		Charging and Working							
5	90				FCC Part15	CLASS B(n)			CC Part15 CLASS B CC Part15 CLASS B	
(M, GPA) lauxa. 1	20 10 -10 -20 150k	Petector	AV Detector	^{**} ν ^{ωδ} τήγμανος ^{**} ν ^ψ ητήγμας **···································	Freque	ncy[Hz]	Andrew provide statements And a statement of the statements And a statement of the statements	10M		Зом
	20 10 -10 -20 150k	Detector	AV Detector		Freque	ncy[Hz]	Andre	10M		Зом
	20 10 -10 -20 150k • QF	Petector Factor [dB]	AV Detector	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	Зом AV Margin [dB]
Final	20 10 -10 -20 150k • OF Data List Freq.	Factor	QP Reading	QP Value	QP Limit	QP Margin	Reading	AV Value	Limit	AV Margin
Final NO.	20 10 10 -10 -20 150k • OF Data List Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	Reading [dBµV]	AV Value [dBµV]	Limit [dBµV]	AV Margin [dB]
Final NO.	20 10 -10 -20 150k • OF Data List Freq. [MHz] 0.47	Factor [dB] 9.48	QP Reading [dBμV] 27.08	QP Value [dBµV] 36.56	QP Limit [dBµV] 56.52	QP Margin [dB] 19.96	Reading [dBµV] 15.57	AV Value [dBµV] 25.05	Limit [dBµV] 46.52	AV Margin [dB] 21.47
Final NO. 1 2	20 10 -10 -20 150k • QF Data List Freq. [MHz] 0.47 0.69	Factor [dB] 9.48 9.43	QP Reading [dBμV] 27.08 30.00	QP Value [dBµV] 36.56 39.43	QP Limit [dBµV] 56.52 56.00	QP Margin [dB] 19.96 16.57	Reading [dBµV] 15.57 16.91	AV Value [dBμV] 25.05 26.34	Limit [dBµV] 46.52 46.00	AV Margin [dB] 21.47 19.66
Final NO. 1 2 3	20 10 -10 -20 150k • OF Data List Freq. [MHz] 0.47 0.69 0.80	Factor [dB] 9.48 9.43 9.28	QP Reading [dBμV] 27.08 30.00 29.74	QP Value [dBµV] 36.56 39.43 39.02	QP Limit [dBµV] 56.52 56.00 56.00	QP Margin [dB] 19.96 16.57 16.98	Reading [dBµV] 15.57 16.91 15.07	ΑV Value [dBμV] 25.05 26.34 24.35	Limit [dBµV] 46.52 46.00 46.00	AV Margin [dB] 21.47 19.66 21.65

- 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	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(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:

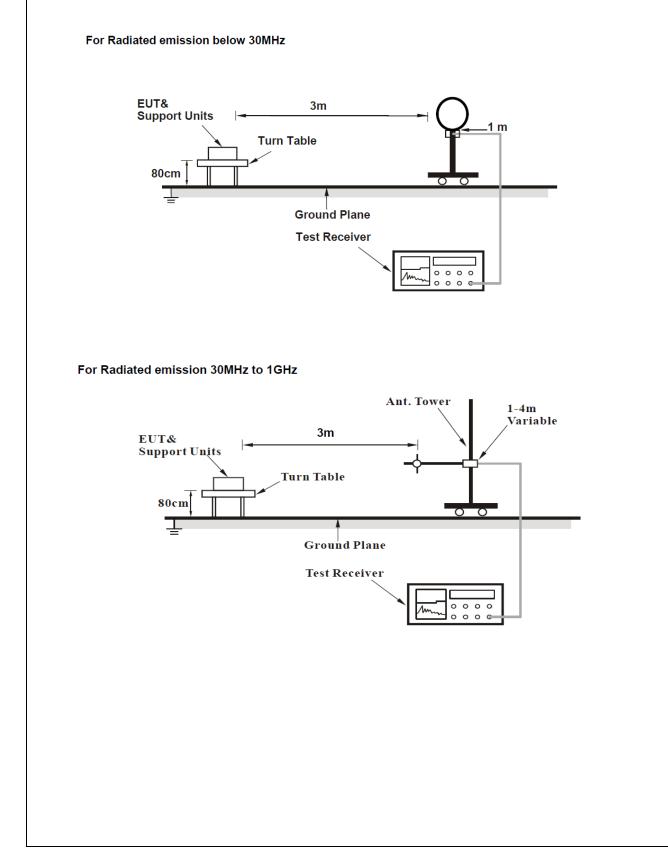
- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz & 360 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
- 2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency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

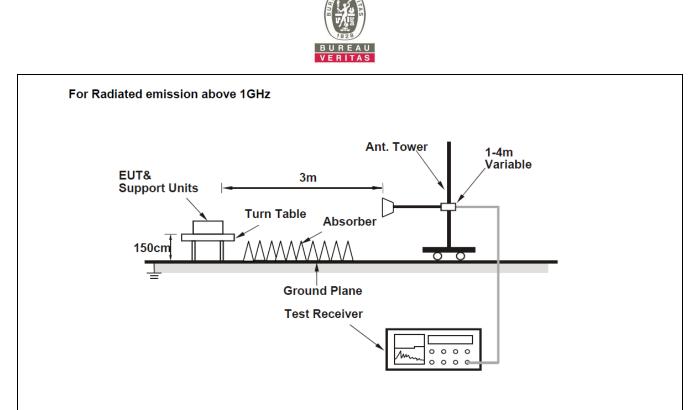
4.2.3 Deviation from Test Standard

No deviation.



4.2.4 Test Setup





For 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

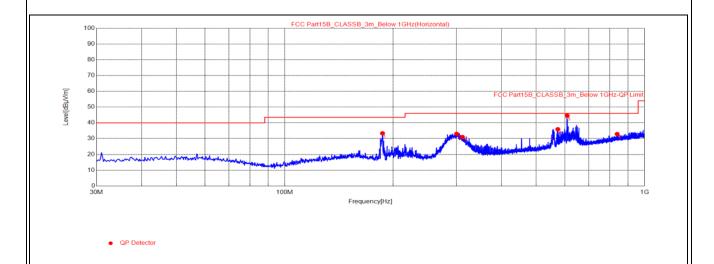
The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.



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 Frequency Range			11b_241	2_Ant1	Detec	tor Fund	tion	Quasi-F	Peak (QP)	
requ	ency Rar	nge	30MHz ~	- 1GHz	Anter	na Pola	rity	Vertical		
Power	supply		Powered	l by battery						
	100		FCC Part15B_CLASSB_3m_Below 1GHz(Vertical)							
	90									
	80									
	70									
_evel[dBµV/m]	60 50							FCC Part15B_C	LASSB_3m_Below 1	1GHz-QP Limit
Level[d]	40									•
	30								Liddh la-	Mary Mary
	20	mman	munned	للمليسين ورسامه	Harrison to be the state of the	A	and the second s	And and the state of the state		
	10									
	10 0 30M			100M	Frequency	y[Hz]				
Final	• OP Data List		Factor					Height		16
Final NO.	0 30M • QP	Reading [dBµV]	Factor [dB]	Value [dBµV/m]	Frequency Limit [dBµV/m]	(Hz) Margin [dB]	Detector	Height [cm]	Angle[°]	Polarity
	• QP Data List Freq.[Reading		Value	Limit	Margin	Detector	-	Angle[°]	
NO.	Data List Freq.[MHz]	Reading [dBµV]	[dB]	Value [dBµV/m]	Limit [dBµV/m]	Margin [dB]		[cm]		Polarity
NO. 1	• QP1 Data List Freq.[MHz] 30.97	Reading [dBµV] 41.49	[dB] -12.05	Value [dBµV/m] 29.44	Limit [dBµV/m] 40.00	Margin [dB] 10.56	QP	[cm] 194	24	Polarity Vertical
NO. 1 2	• OP Data List Freq.[MHz] 30.97 37.37	Reading [dBµV] 41.49 38.86	[dB] -12.05 -11.46	Value [dBµV/m] 29.44 27.40	Limit [dBµV/m] 40.00 40.00	Margin [dB] 10.56 12.60	QP QP	[cm] 194 155	24 12	Polarity Vertical Vertical
NO. 1 2 3	• QP Data List Freq.[MHz] 30.97 37.37 54.06	Reading [dBμV] 41.49 38.86 37.5	[dB] -12.05 -11.46 -10.36	Value [dBµV/m] 29.44 27.40 27.14	Limit [dBµV/m] 40.00 40.00 40.00	Margin [dB] 10.56 12.60 12.86	QP QP QP	[cm] 194 155 121	24 12 92	Polarity Vertical Vertical Vertical

Γ

- 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	Н	PK			
2	4823.30	43.20	54.00	10.80	-2.99	Н	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	Н	PK			
2	4874.30	42.25	54.00	11.75	-2.88	Н	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			

- 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	Detector Function	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	Н	PK			
2	4923.60	43.04	54.00	10.96	-2.72	Н	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			

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	Delector Function	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	Н	PK			
2	4823.30	37.86	54.00	16.14	-2.99	Н	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	Н	PK			
2	4874.30	38.79	54.00	15.21	-2.88	Н	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			

- 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	Detector Function	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	Н	PK			
2	4925.30	38.27	54.00	15.73	-2.72	Н	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			

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	Delector Function	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	Н	PK
2	4823.30	38.89	54.00	15.11	-2.99	Н	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	Delector Function	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	Н	PK	
2	4874.30	38.58	54.00	15.42	-2.88	Н	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	

- 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	Detector Function	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	Н	PK
2	4925.30	37.55	54.00	16.45	-2.72	Н	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

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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