FCC Test Report (Co-Located)

Report No.:	RF190919D02-5
FCC ID:	P27NA503S
Test Model:	NA503S-4G
Series Model:	NA503S-4Gxxxxxxxx (the 1st x should be "blank" or "-"; the rest x could be 0 to 9, A to Z, "blank" or "- ", for marketing purpose)
Received Date:	Sep. 19, 2019
Test Date:	Oct. 22, 2019
Issued Date:	Dec. 6, 2019
Applicant:	Sercomm Corp.
Address:	8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan, R.O.C. (NanKang Software Park)
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
FCC Registration / Designation Number:	198487 / TW2021

Testing Laboratory
2021

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Release Control Record

Issue No.	Description	Date Issued
RF190919D02-5	Original release.	Dec. 6, 2019

1 Certificate of Conformity

Product:	Multiple RF Home Gateway
Brand:	Craftsman
Test Model:	NA503S-4G
Series Model:	NA503S-4Gxxxxxxxx (the 1st x should be "blank" or "-"; the rest x could be 0 to 9, A to Z, "blank" or "- " , for marketing purpose)
Sample Status:	Engineering sample
Applicant:	Sercomm Corp.
Test Date:	Oct. 22, 2019
Standard:	47 CFR FCC Part 15, Subpart C (Section 15.247) 47 CFR FCC Part 15, Subpart E (Section 15.407) 47 CFR FCC Part 15, Subpart C (Section 15.249) FCC Part 22, Subpart H FCC Part 24, Subpart E FCC Part 27, Subpart C, H, F, L ANSI C63.10: 2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, 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 RF characteristics under the conditions specified in this report.

Prepared by : Annie Chang , **Date:** Dec. 6, 2019

Annie Chang / Senior Specialist

Approved by : Rex. Lai , **Date:** Dec. 6, 2019

Rex Lai / Associate Technical Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247), 47 CFR FCC Part 15, Subpart C (Section 15.249) 47 CFR FCC Part 15, Subpart E (Section 15.407), FCC Part 22, Subpart H FCC Part 24, Subpart E FCC Part 27, Subpart C, H, F, L			
FCC Clause	Test Item	Result	Remarks
15.205 15.209 15.247(d) 15.407(b) (1/2/3/4(i/ii)/6) 2.1053 22.917 24.238 27.53(h)	Radiated Emissions Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.11dB at 2390.00MHz.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	2.38 dB
	30MHz ~ 1GHz	5.43 dB
Radiated Emissions above 1 GHz	Above 1GHz	5.42 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Multiple RF Home Gateway	
Brand	Craftsman	
Test Model	NA503S-4G	
Series Model	NA503S-4Gxxxxxxxx (the 1st x should be "blank" or "-"; the rest x could be 0 to 9, A to Z, "blank" or "- ", for marketing purpose)	
Model Difference	For marking purpose	
Status of EUT	Engineering sample	
Power Supply Rating	DC 12V from Adapter or DC 7.5V from battery	
Modulation Type	WLAN	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only.
	Z-Wave	FSK
	Zigbee	OQPSK
	BT LE	GFSK
	WCDMA	QPSK
	LTE	QPSK, 16QAM
Modulation Technology	WLAN	DSSS,OFDM
Transfer Rate	WLAN	802.11a: up to 6Mbps 802.11b: up to 11Mbps 802.11g: up to 54Mbps 802.11n: up to 300Mbps 802.11ac: up to 866.7Mbps
	Zigbee	250Kbps
	BT LE	1Mbps
Operating Frequency	WLAN	2412~2462MHz, 5180~5240MHz, 5745~5825MHz
	Z-Wave	908.4MHz, 916.0MHz
	Zigbee	2405 ~ 2480MHz
	BT LE	2402 ~ 2480MHz

Frequency Range	WCDMA Band 2	1852.4 ~ 1907.6 MHz
	WCDMA Band 5	826.4 ~ 846.6MHz,
	LTE Band 2	Channel Bandwidth 1.4MHz: 1850.7 ~ 1909.3MHz Channel Bandwidth 3MHz: 1851.5 ~ 1908.5MHz Channel Bandwidth 5MHz: 1852.5 ~ 1907.5MHz Channel Bandwidth 10MHz: 1855.0 ~ 1905.0MHz Channel Bandwidth 15MHz: 1857.5 ~ 1902.5MHz Channel Bandwidth 20MHz: 1860.0 ~ 1900.0MHz
	LTE Band 4	Channel Bandwidth 1.4MHz: 1710.7 ~ 1754.3MHz Channel Bandwidth 3MHz: 1711.5 ~ 1753.5MHz Channel Bandwidth 5MHz: 1712.5 ~ 1752.5MHz Channel Bandwidth 10MHz: 1715.0 ~ 1750.0MHz Channel Bandwidth 15MHz: 1717.5 ~ 1747.5MHz Channel Bandwidth 20MHz: 1720.0 ~ 1745.0MHz
	LTE Band 5	Channel Bandwidth 1.4MHz: 824.7 ~ 848.3MHz Channel Bandwidth 3MHz: 825.5 ~ 847.5MHtz Channel Bandwidth 5MHz: 826.5 ~ 846.5MHz Channel Bandwidth 10MHz: 829.0 ~ 844.0MHz
	LTE Band 12	Channel Bandwidth 1.4MHz: 699.7 ~ 715.3MHz Channel Bandwidth 3MHz: 700.5 ~ 714.5MHz Channel Bandwidth 5MHz: 701.5 ~ 713.5MHz Channel Bandwidth 10MHz: 704.0 ~ 711.0MHz
	LTE Band 13	Channel Bandwidth 3MHz: 779.5 ~ 784.5MHz Channel Bandwidth 5MHz: 782.0MHz
Number of Channel	WLAN	**2412~2462MHz:** 11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz) **5180~5240MHz:** 4 for 802.11a, 802.11n (20MHz), 802.11ac (20MHz) 2 for 802.11n (40MHz), 802.11ac (40MHz) 1 for 802.11ac (80MHz) **5745~5825MHz:** 5 for 802.11a, 802.11n (20MHz) 802.11ac (20MHz) 2 for 802.11n (40MHz) 802.11ac (40MHz) 1 for 802.11ac (80MHz)
	Z-Wave	2
	Zigbee	16
	BT LE	40
Output Power	WLAN	**2412~2462MHz**: 599.834mW **5180~5240MHz:** 52.187mW **5745~5825MHz:** 72.533mW
	Zigbee	18.408mW
	BT LE	19.861mW

Max. ERP Power	WCDMA Band 5	218.776mW (23.40dBm)
	LTE Band 5	Channel Bandwidth 1.4MHz: 204.174mW (23.10dBm) Channel Bandwidth 3MHz: 204.174mW (23.10dBm) Channel Bandwidth 5MHz: 208.890mW (23.20dBm) Channel Bandwidth 10MHz: 194.984mW (22.90dBm)
	LTE Band 12	Channel Bandwidth 1.4MHz: 158.489mW (22.00dBm) Channel Bandwidth 3MHz: 147.911mW (21.70dBm) Channel Bandwidth 5MHz: 147.911mW (21.70dBm) Channel Bandwidth 10MHz: 120.226mW (20.80dBm)
	LTE Band 13	Channel Bandwidth 3MHz: 120.226mW (20.80dBm) Channel Bandwidth 5MHz: 128.825mW (21.10dBm)
Max. EIRP Power	WCDMA Band 2	245.471mW (23.90dBm)
	LTE Band 2	Channel Bandwidth 1.4MHz: 331.131mW (25.20dBm) Channel Bandwidth 3MHz: 323.594mW (25.10dBm) Channel Bandwidth 5MHz: 331.131mW (25.20dBm) Channel Bandwidth 10MHz: 331.131mW (25.20dBm) Channel Bandwidth 15MHz: 331.131mW (25.20dBm) Channel Bandwidth 20MHz: 338.844mW (25.30dBm)
	LTE Band 4	Channel Bandwidth 1.4MHz: 263.027mW (24.20dBm) Channel Bandwidth 3MHz: 275.423mW (24.40dBm) Channel Bandwidth 5MHz: 263.027mW (24.20dBm) Channel Bandwidth 10MHz: 269.153mW (24.30dBm) Channel Bandwidth 15MHz: 269.153mW (24.30dBm) Channel Bandwidth 20MHz: 281.838mW (24.50dBm)
Antenna Type	Refer to note as below	
Antenna Connector	Refer to note as below	
Accessory Device	Refer to note as below	
Data Cable Supplied	N/A	

Note:

1. The EUT provides 2 completed transmitter and 2 receiver.

Modulation Mode	TX Function
802.11a	2TX
802.11b	2TX
802.11g	2TX
802.11n (20MHz)	2TX
802.11n (40MHz)	2TX
802.11ac (20MHz)	2TX
802.11ac (40MHz)	2TX
802.11ac (80MHz)	2TX

2. The EUT uses following adapter or battery.

Item	Adapter	Battery
Brand	APD	Simplo
Model	WB-24J12FU	NA50X
AC I/P Rating	100-240V, 50-60Hz, 0.7A	-
DC O/P Rating	12V, 2A	7.5V, 2500mAh, 18Wh
Power cord	AC 2 Pin, Non-shielded DC cable (1.5m)	-

3. The EUT used antennas listed as below:

Function	Ant. No.	Frequency Band (MHz)	Antenna Type	Antenna Connector	Gain (dBi)	
					Chian 0	Chian 1
WCDMA Band 2	Ant. 1 & 2	826.4-846.6	PIFA	I-PEX	3.00	2.49
WCDMA Band 5		1852.4-1907.6	PIFA	I-PEX	-0.66	0.03
LTE Band 2		1850.7-1909.3	PIFA	I-PEX	3.00	2.49
LTE Band 4		1710.7-1754.3	PIFA	I-PEX	1.87	2.58
LTE Band 5		824.7-848.3	PIFA	I-PEX	-0.66	0.03
LTE Band 12		699.7-715.3	PIFA	I-PEX	-0.45	-0.63
LTE Band 13		779.5-784.5	PIFA	I-PEX	-0.14	0.76
WLAN	Ant. 3 & 4	2412-2462	Dipole	I-PEX	2.65	2.94
WLAN		5180-5240	Dipole	I-PEX	2.56	2.82
WLAN		5745-5825	Dipole	I-PEX	3.20	2.85
BT LE	Ant. 5	2402-2480	Dipole	I-PEX	3.74	-
Zigbee	Ant. 6	2405-2480	Dipole	I-PEX	3.95	-
Z-Wave	Ant. 7	908.4, 916.0	PIFA	N/A	1.26	-

4. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To		Description
	RE≥1G	RE<1G	
-	√	√	-

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

Radiated Emission Test (Above 1GHz):

☒ 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
-	LTE B12 + WiFi 2.4GHz + WiFi 5GHz + Zigbee + Z-Wave + BT LE

Radiated Emission Test (Below 1GHz):

☒ 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
-	LTE B12 + WiFi 2.4GHz + WiFi 5GHz + Zigbee + Z-Wave + BT LE

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE≥1G	25deg. C, 77%RH	120Vac, 60Hz	Ian Chang
RE<1G	25deg. C, 77%RH	120Vac, 60Hz	Ian Chang

3.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

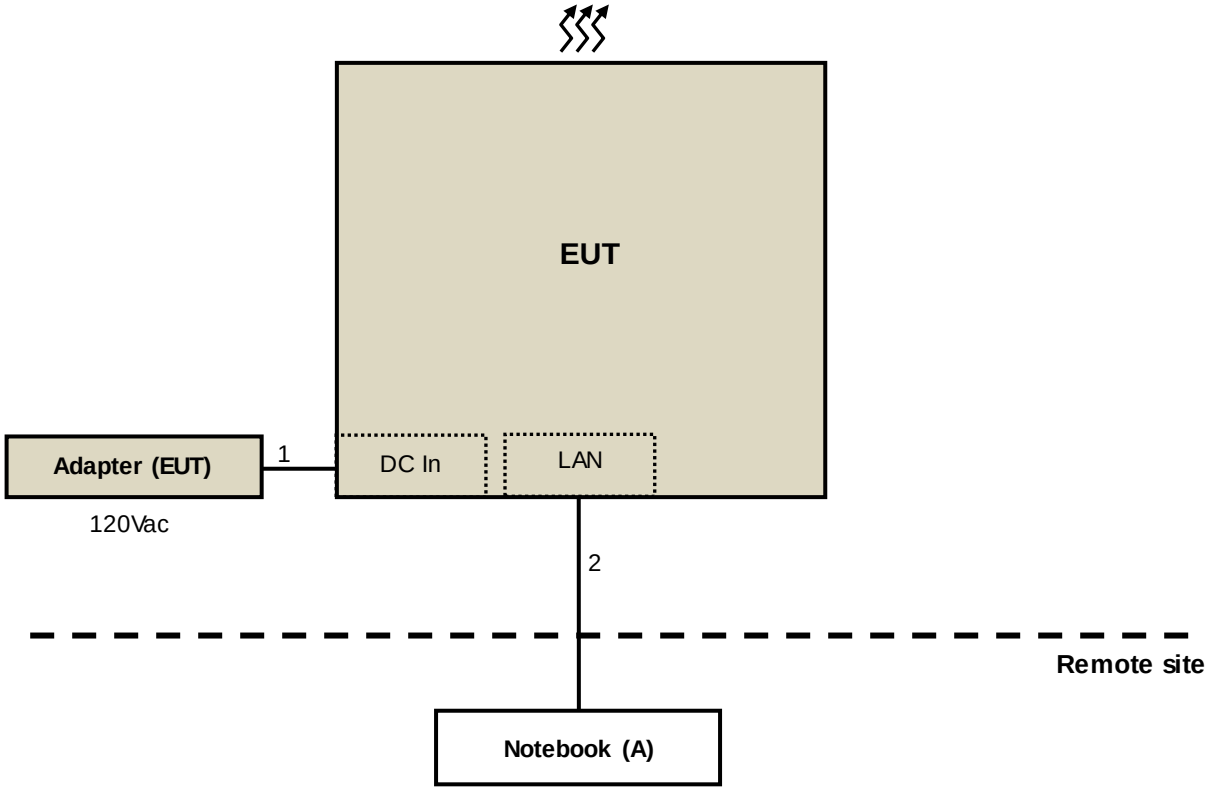
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook PC	DELL	E6530	9331GV1	N/A	Provided by Lab

Note:
1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as communication partners to transfer data.

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/ No)	Cores (Qty.)	Remarks
1.	DC cable	1	1.5	N	0	Supplied by client
2.	LAN cable	1	10	N	0	Provided by Lab (RJ45, Cat.5e)

Note: The core(s) is(are) originally attached to the cable(s).

3.3.1 Configuration of System under Test



3.4 General Description of Applied Standard and references

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

Test standard:
FCC Part 15, Subpart C (15.247)
ANSI C63.10-2013
All test items have been performed and recorded as per the above standards.

References Test Guidance:
KDB 558074 D01 15.247 Meas Guidance v05r02
KDB 662911 D01 Multiple Transmitter Output v02r01
All test items have been performed as a reference to the above KDB test guidance.

Test standard:
FCC Part 15, Subpart E (15.407)
ANSI C63.10-2013
All test items have been performed and recorded as per the above standards.

References Test Guidance:
KDB 789033 D02 General UNII Test Procedure New Rules v02r01
KDB 662911 D01 Multiple Transmitter Output v02r01
All test items have been performed as a reference to the above KDB test guidance.

Test standard:
FCC Part 15, Subpart C (15.249)
ANSI C63.10-2013
All test items have been performed and recorded as per the above standards.

Test standard:
FCC 47 CFR Part 2
FCC 47 CFR Part 22
ANSI/TIA/EIA-603-E 2016
ANSI 63.26-2015
All test items have been performed and recorded as per the above standards.

References Test Guidance:
KDB 971168 D01 Power Meas License Digital Systems v03r01
All test items have been performed as a reference to the above KDB test guidance.

Test standard:

FCC 47 CFR Part 2
FCC 47 CFR Part 24
ANSI/TIA/EIA-603-E 2016
ANSI 63.26-2015
ANSI 63.2-1996

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

References Test Guidance:
KDB 971168 D01 Power Meas License Digital Systems v03r01
All test items have been performed as a reference to the above KDB test guidance.

Test standard:
FCC 47 CFR Part 2
FCC 47 CFR Part 27
ANSI/TIA/EIA-603-E 2016
ANSI 63.26-2015
All test items have been performed and recorded as per the above standards.

References Test Guidance:
KDB 971168 D01 Power Meas License Digital Systems v03r01
All test items have been performed as a reference to the above KDB test guidance.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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 1000MHz, 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 20dB under any condition of modulation.

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	Feb. 20, 2019	Feb. 19, 2020
HP Preamplifier	8449B	3008A01201	Feb. 21, 2019	Feb. 20, 2020
MITEQ Preamplifier	AMF-6F-260400-33-8P	892164	Feb. 20, 2019	Feb. 19, 2020
Agilent TEST RECEIVER	N9038A	MY51210129	Mar. 05, 2019	Mar. 04, 2020
Schwarzbeck Antenna	VULB 9168	139	Nov. 26, 2018	Nov. 25, 2019
Schwarzbeck Antenna	VHBA 9123	480	Jun. 3, 2019	Jun. 2, 2021
Schwarzbeck Horn Antenna	BBHA-9170	212	Nov. 25, 2018	Nov. 24, 2019
Schwarzbeck Horn Antenna	BBHA 9120-D1	D130	Nov. 25, 2018	Nov. 24, 2019
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	Radiated_V7.6.15.9.5	NA	NA	NA
SUHNER RF cable With 4dB PAD	SF102	Cable-CH6-01	Jul. 10, 2019	Jul. 9, 2020
SUHNER RF cable With 3/4dB PAD	SF102	Cable-CH8-3.6m	Jul. 10, 2019	Jul. 9, 2020
KEYSIGHT MIMO Powermeasurement Test set	U2021XA	U2021XA-001	Jun. 11, 2019	Jun. 10, 2020
KEYSIGHT Spectrum Analyzer	N9030A	MY54490260	Jul. 30, 2019	Jul. 29, 2020
Loop Antenna EMCI	LPA600	270	Aug. 23, 2019	Aug. 22, 2021
EMCO Horn Antenna	3115	00028257	Nov. 25, 2018	Nov. 24, 2019
Highpass filter Wainwright Instruments	WHK 3.1/18G-10SS	SN 8	NA	NA
ROHDE & SCHWARZ Spectrum Analyzer	FSV40	101042	Sep. 23, 2019	Sep. 22, 2020
Anritsu Power Sensor	MA2411B	0738404	Apr. 16, 2019	Apr. 15, 2020
Anritsu Power Meter	ML2495A	0842014	Apr. 16, 2019	Apr. 15, 2020

NOTE: 1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in Chamber No. 6.

4.1.3 Test Procedure

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 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. Parallel, Perpendicular and Ground-parallel of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case 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.

NOTE:

1. 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 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) 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 detect 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:

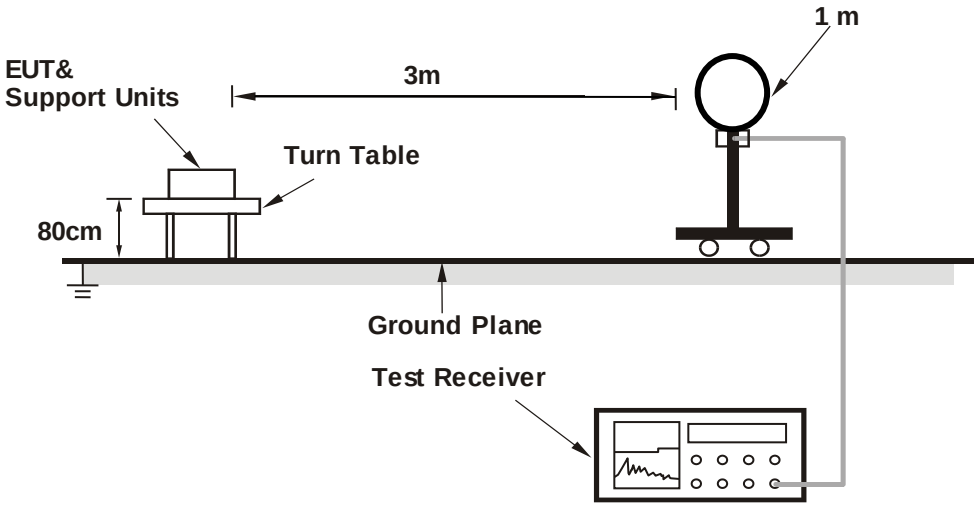
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

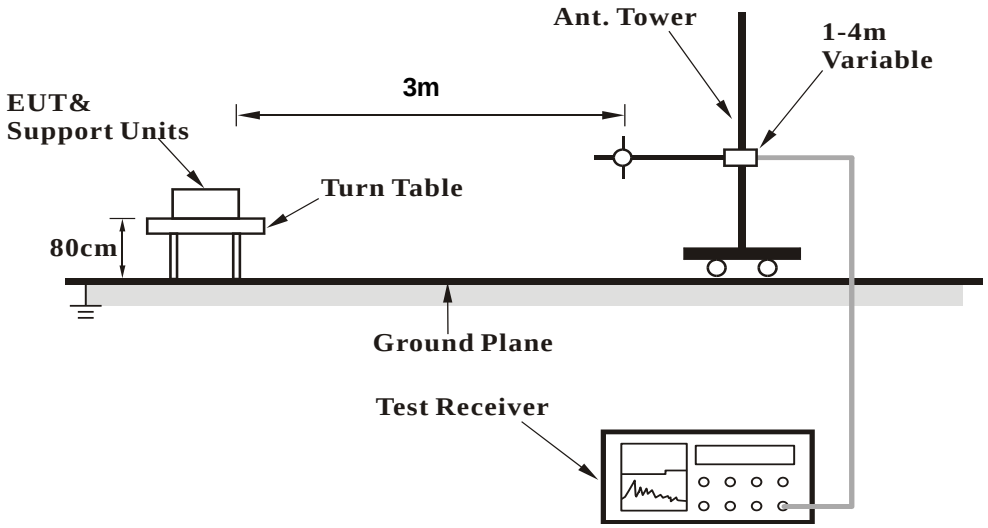
No deviation.

4.1.5 Test Setup

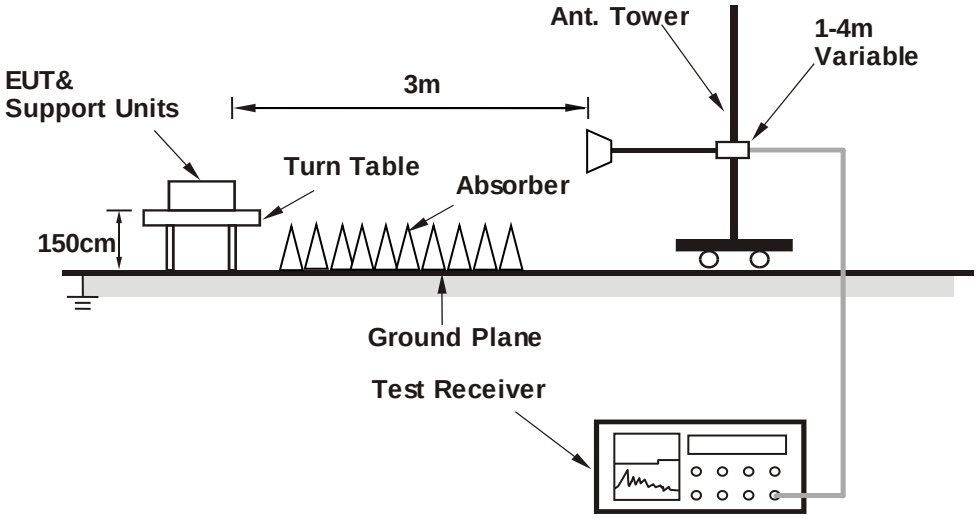
For Radiated emission below 30MHz



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).

4.1.6 EUT Operating Condition

a. Placed the EUT on the testing table.
b. Prepared notebooks to act as communication partner and placed it outside of testing area.
c. The communication partner connected with EUT via a RJ45 cable and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
d. The necessary accessories enable the system in full functions.

4.1.7 Test Results

ABOVE 1GHz DATA

Frequency Range	1GHz ~ 40GHz	**Detector Function**	Peak (PK) Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	1399.40	47.31 PK	74.00	-26.69	2.06 H	102	51.83	-4.52
2	1399.40	36.82 AV	54.00	-17.18	2.06 H	102	41.34	-4.52
3	#1816.80	62.59 PK	68.20	-5.61	2.45 H	168	64.52	-1.93
4	#1816.80	45.12 AV	54.00	-8.88	2.45 H	168	47.05	-1.93
5	2390.00	58.67 PK	68.20	-9.53	1.97 H	215	58.23	0.44
6	2390.00	51.47 AV	54.00	-2.53	1.97 H	215	51.03	0.44
7	2483.50	57.73 PK	74.00	-16.27	1.97 H	44	57.11	0.62
8	2483.50	45.78 AV	54.00	-8.22	1.97 H	44	45.16	0.62
9	4874.00	53.14 PK	74.00	-20.86	1.84 H	257	44.75	8.39
10	4874.00	44.58 AV	54.00	-9.42	1.84 H	257	36.19	8.39
11	4880.00	50.22 PK	74.00	-23.78	1.69 H	238	41.81	8.41
12	4880.00	37.30 AV	54.00	-16.70	1.69 H	238	28.89	8.41
13	#5580.48	62.01 PK	68.20	-6.19	2.25 H	36	51.84	10.17
14	#5994.63	63.41 PK	68.20	-4.79	2.25 H	36	53.51	9.90
15	11490.00	58.68 PK	74.00	-15.32	2.36 H	351	40.97	17.71
16	11490.00	46.74 AV	54.00	-7.26	2.36 H	351	29.03	17.71

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	1399.40	45.42 PK	74.00	-28.58	2.55 V	149	49.94	-4.52
2	1399.40	35.35 AV	54.00	-18.65	2.55 V	149	39.87	-4.52
3	#1816.80	60.18 PK	68.20	-8.02	1.07 V	148	62.11	-1.93
4	#1816.80	42.12 AV	54.00	-11.88	1.07 V	148	44.05	-1.93
5	2390.00	60.21 PK	68.20	-7.99	1.78 V	49	59.77	0.44
6	**2390.00**	**52.89 AV**	**54.00**	**-1.11**	**1.78 V**	**49**	**52.45**	**0.44**
7	2483.50	58.44 PK	74.00	-15.56	1.81 V	58	57.82	0.62
8	2483.50	47.48 AV	54.00	-6.52	1.81 V	58	46.86	0.62
9	4874.00	53.75 PK	74.00	-20.25	1.55 V	254	45.36	8.39
10	4874.00	48.28 AV	54.00	-5.72	1.55 V	254	39.89	8.39
11	4880.00	49.54 PK	74.00	-24.46	2.36 V	192	41.13	8.41
12	4880.00	36.31 AV	54.00	-17.69	2.36 V	192	27.90	8.41
13	#5602.36	61.91 PK	68.20	-6.29	1.87 V	271	51.85	10.06
14	#5964.89	62.67 PK	68.20	-5.53	1.87 V	271	52.83	9.84
15	11490.00	59.74 PK	74.00	-14.26	2.71 V	146	42.03	17.71
16	11490.00	47.78 AV	54.00	-6.22	2.71 V	146	30.07	17.71

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " # ": The radiated frequency is out of the restricted band.

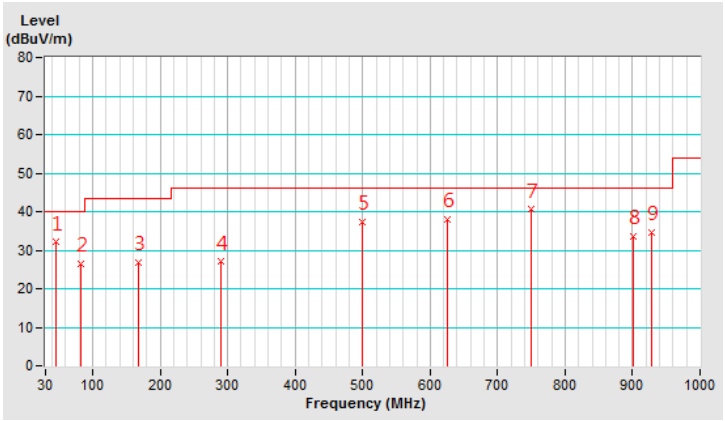
Below 1GHz DATA

Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	46.15	32.06 QP	40.00	-7.94	1.06 H	346	39.31	-7.25
2	82.43	26.50 QP	40.00	-13.50	1.37 H	286	38.50	-12.00
3	166.92	26.94 QP	43.50	-16.56	2.06 H	267	33.76	-6.82
4	289.67	27.01 QP	46.00	-18.99	1.00 H	77	32.20	-5.19
5	500.01	37.29 QP	46.00	-8.71	1.94 H	155	37.96	-0.67
6	625.00	38.13 QP	46.00	-7.87	1.72 H	282	35.78	2.35
7	749.98	40.58 QP	46.00	-5.42	1.37 H	98	36.04	4.54
8	902.00	33.69 QP	46.00	-12.31	2.45 H	78	26.68	7.01
9	928.00	34.68 QP	46.00	-11.32	2.45 H	78	27.19	7.49

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

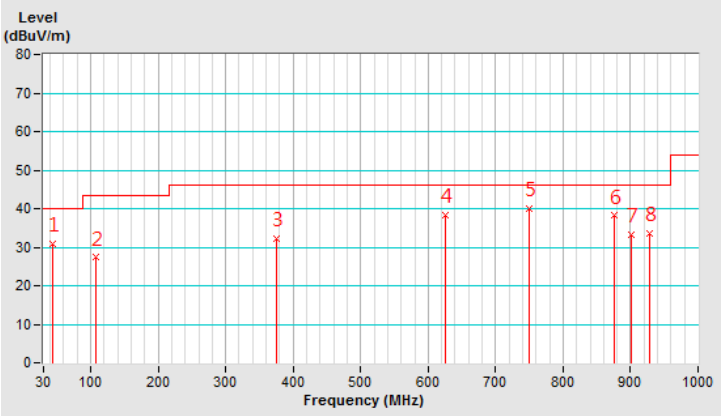


Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	42.95	30.91 QP	40.00	-9.09	1.08 V	157	38.40	-7.49
2	106.68	27.35 QP	43.50	-16.15	1.34 V	355	37.75	-10.40
3	375.03	32.36 QP	46.00	-13.64	1.87 V	208	35.87	-3.51
4	625.00	38.40 QP	46.00	-7.60	2.26 V	125	36.05	2.35
5	750.01	40.03 QP	46.00	-5.97	2.78 V	287	35.49	4.54
6	875.02	38.14 QP	46.00	-7.86	1.00 V	315	31.74	6.40
7	902.00	33.28 QP	46.00	-12.72	1.03 V	25	26.27	7.01
8	928.00	33.67 QP	46.00	-12.33	1.03 V	25	26.18	7.49

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



5 Pictures of Test Arrangements

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

Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.

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