FCC Part 15B TEST REPORT

Product Name : GPS Locator

Model Name : GV500VC

Prepared for:

Queclink Wireless Solutions Co.,Ltd
Room 501, Building 9, No 99, TianZhou Road, Shanghai, China
TEL: +86 21 51082965
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Prepared by:

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Report Number	**:**	UL12620150727FCC051-1
Date of Report	**:**	10-08-2015
Date of Test	**:**	03-08-2015~06-08-2015

Notes：

The test results only relate to these samples which have been tested.
Partly using this report will not be admitted unless been allowed by Unilab.
Unilab is only responsible for the complete report with the reported stamp of Unilab.

Applicant:	Queclink Wireless Solutions Co.,Ltd.
	Room 501, Building 9, No 99, TianZhou Road, Shanghai, China.
Manufacturer:	Queclink Wireless Solutions Co.,Ltd.
	Room 501, Building 9, No 99, TianZhou Road, Shanghai, China.
Product Name:	GPS Locator
Brand Name:	Queclink
Model Name:	GV500VC
FCC ID:	YQD- GV500VC
EUT Voltage:	Extreme Low:DC 8V Nominal:DC 12V/24V Extreme High:DC 32V
Date of Receipt:	28-07-2015
Date of Test	03-08-2015~10-08-2015
Test Standard:	FCC CFR Tile 47 Part 15 Subpart B
Test Result:	PASS

Prepared by : Jingwei Li
(Technical Engineer: Jingwei Li)

Reviewed by : Forest cao
(Senior Engineer: Forest Cao)

Approved by : Eva wang
(Supervisor Engineer: Eva Wang)

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1.TECHNIACL SUMMARY

1.1 SUMMARY OF STANDARDS AND TEST RESULTS

The EUT have been tested according to the applicable standards as referenced below:

Test Item	FCC	Result
Conducted disturbance	FCC 15.107	P[1]
Radiated disturbance	FCC 15.109	P

Note 1: P means pass, F means failure, N/A means not applicable.

1.2 TEST UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:2011. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Value (dB)
Conducted disturbance	3.4
Radiated disturbance	4.2

1.3 TEST EQUIPMENT LIST

Shielding Room No. 3 - Conducted disturbance Test					
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Due Date**	**Cal interval**
Receiver	Agilent	N9038A	MY51210142	2015/09/26	1 year
LISN	R&S	ENV216	100069	2016/07/26	1 year

3m Semi-anechoic Chamber - Radiated disturbance Test					
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Due Date**	**Cal interval**
3m Chamber & Accessory Equipment	ETS-LINDGREN	FACT-3	CT-0000336	2016/11/25	2 years
Receiver	Agilent	N9038A	MY51210142	2015/09/26	1 year
Biconilog Antenna	SCHWARZBECK	VULB 9160	3316	2015/09/19	2 years
Horn Antenna	Schwarzbeck	BBHA9120D	942	2015/07/19	2 years
Microwave Preamplifier	EM Electronics	EM30180	3008A02425	2016/02/27	1 year

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and has been calibrated by accredited calibration laboratories.

1.4 SUPPORT EQUIPMENT

Equipment	Manufacturer	Model	Serial No.	Due Date
PC	LENOVO	M4630N-11	7JXLB3X	/
Displayer	LENOVO	E1910Hc	CN-0CD1MT-64180-OC7-06TS	/
Mouse	LENOVO	MS111-P	CN-0MF3JY-71581-2C7-05GB	/
Keyboard	LENOVO	KB212-B	CN-0Y88XT-65890-22L-01MG-A01	/

1.5 TEST FACILITY

All test facilities used to collect the test data are located at No. 1350, Lianxi Rd. Pudong New District, Shanghai, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4:2009, CISPR 16-1-1:2010 and other equivalent standards. The laboratory is compliance with the requirements of the ISO/IEC/E 17025.

1.6 TEST SETUP CONFIGURATION

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

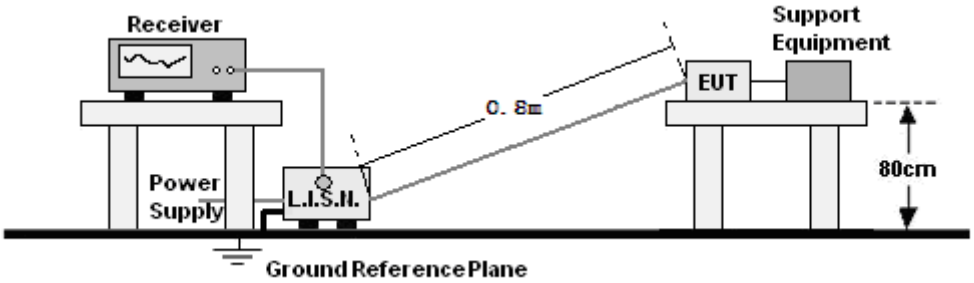
Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer’s requirements and conditions for the intended use.

2. CONDUCTED DISTURBANCE

2.1 TEST SETUP

For mains port:



2.2 LIMITS

Limits for Class B digital devices

Frequency range (MHz)	Limits dB(μV)	
	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

NOTE: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz.

2.3 TEST PROCEDURE

For mains port:

a. The EUT and support equipment were placed on a nonconductive table 0.8m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane. The EUT connected to the main through Line Impedance Stability Network (L.I.S.N) to provide a 50 Ω/50uH coupling impedance for the measuring equipment. The support equipment is also connected to the main power through a LISN that provides a 50 Ω/50uH coupling impedance with 50 Ω terminations. Both sides of AC line (Line & Neutral) were checked to find out the maximum conducted emission.

b. The RBW of the receiver was set at 9 kHz. The frequency range from 150 kHz to 30 MHz was checked. Run the receiver's pre-scan to record the maximum disturbance generated from EUT in all power lines in the full band.

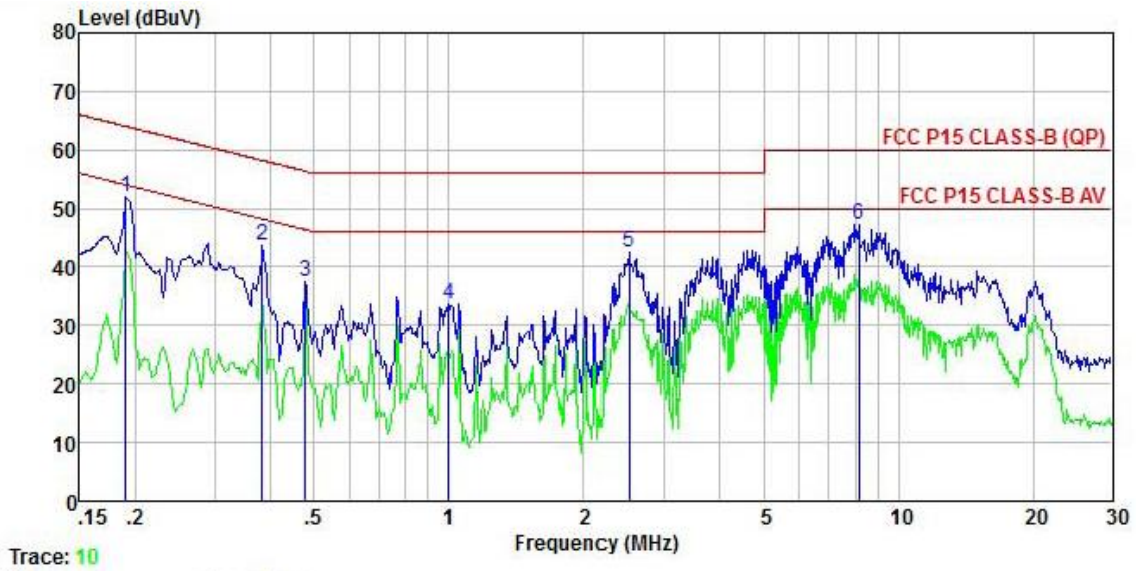
c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

2.4 TEST RESULT

For mains port:

DC 12V

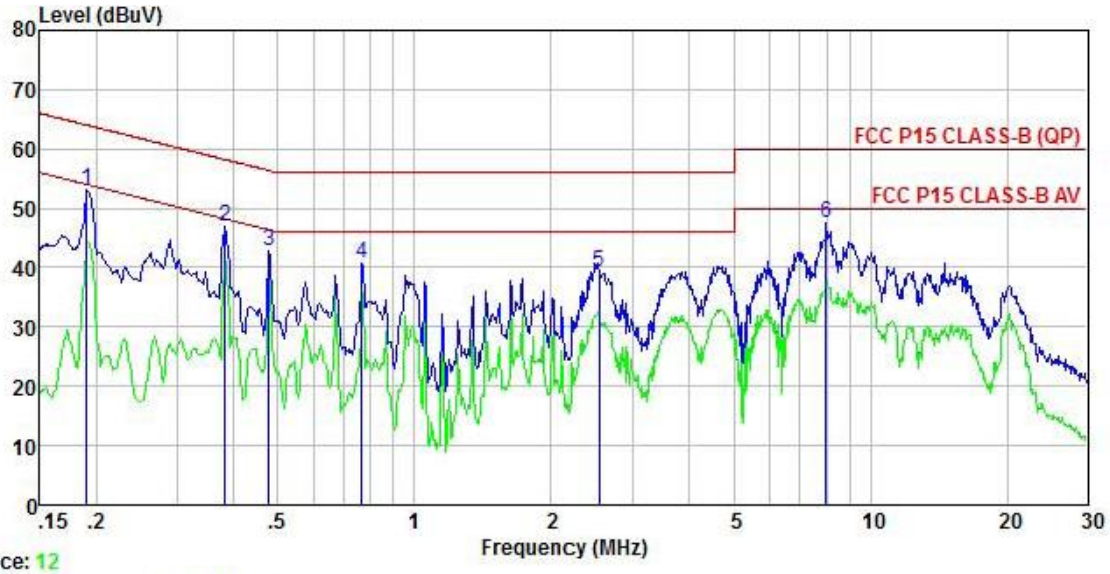
Test mode: Data exchange



Trace: 10

Site : chamber
Condition : FCC P15 CLASS-B (QP) ENV216(L)-20120730 LINE
EUT :
Model Name : GV500VC
Temp/Humi : 24 ℃ / 53 %
Power Rating: DC 12V
Mode : USB Data Exchange
Memo :

	Freq	Read Level	LISN Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1	0.19	41.17	10.47	0.23	0.00	51.87	64.02	-12.15	Peak
2	0.38	33.06	10.53	0.15	0.00	43.74	58.21	-14.47	Peak
3	0.48	26.74	10.56	0.10	0.00	37.40	56.36	-18.96	Peak
4	1.00	23.09	10.52	0.14	0.00	33.75	56.00	-22.25	Peak
5	2.50	31.79	10.52	0.15	0.00	42.46	56.00	-13.54	Peak
6	8.15	36.60	10.44	0.29	0.00	47.33	60.00	-12.67	Peak



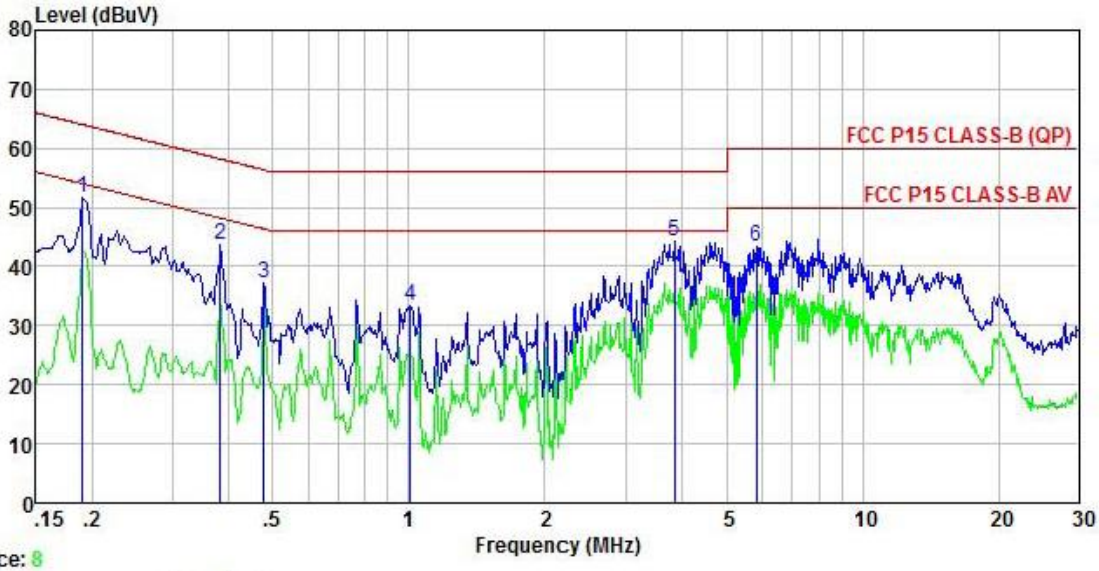
Trace: 12

Site : chamber
Condition : FCC P15 CLASS-B (QP) ENV216(N)-20120730 NEUTRAL
EUT :
Model Name : GV500VC
Temp/Humi : 24 ℃ / 53 %
Power Rating: DC 12V
Mode : USB Data Exchange
Memo :

	Freq	Read Level	LISN Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1	0.19	42.72	10.33	0.23	0.00	53.28	64.02	-10.74	Peak
2	0.38	36.36	10.42	0.15	0.00	46.93	58.21	-11.28	Peak
3	0.48	32.18	10.42	0.10	0.00	42.70	56.36	-13.66	Peak
4	0.77	30.30	10.31	0.12	0.00	40.73	56.00	-15.27	Peak
5	2.53	28.65	10.32	0.15	0.00	39.12	56.00	-16.88	Peak
6	7.98	36.78	10.34	0.29	0.00	47.41	60.00	-12.59	Peak

DC 24V

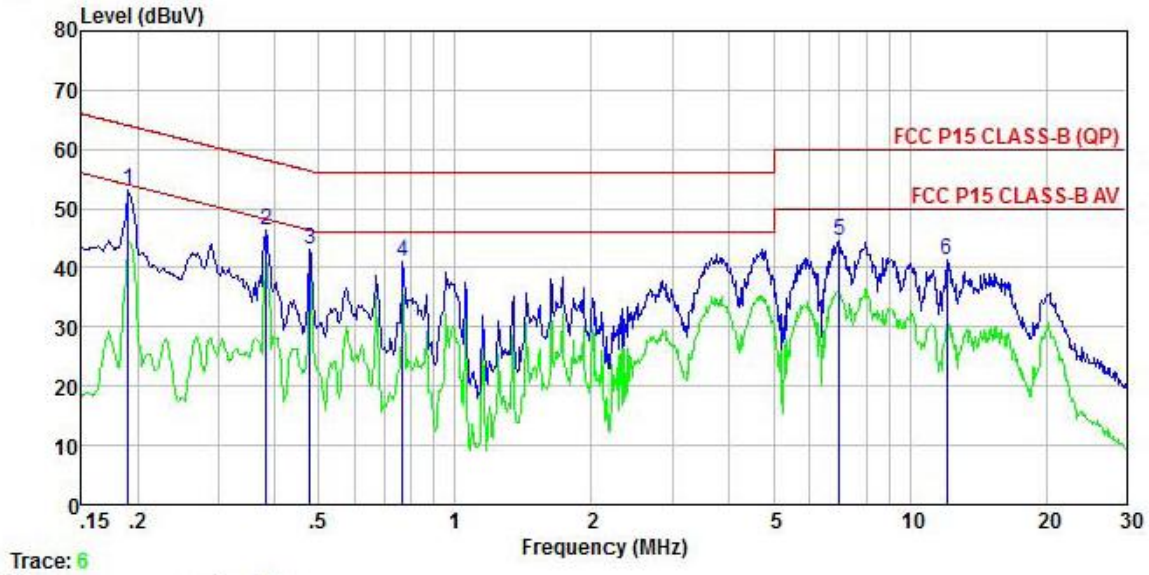
Test mode: Data exchange



Trace: 8

Site : chamber
Condition : FCC P15 CLASS-B (QP) ENV216(L)-20120730 LINE
EUT :
Model Name : GV500VC
Temp/Humi : 24 ℃ / 53 %
Power Rating: DC 24V
Mode : USB Data Exchange
Memo :

	Freq	Read Level	LISN Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1	0.19	41.04	10.47	0.23	0.00	51.74	64.02	-12.28	Peak
2	0.38	32.89	10.53	0.15	0.00	43.57	58.21	-14.64	Peak
3	0.48	26.62	10.56	0.10	0.00	37.28	56.36	-19.08	Peak
4	1.01	22.55	10.52	0.14	0.00	33.21	56.00	-22.79	Peak
5	3.84	33.48	10.52	0.14	0.00	44.14	56.00	-11.86	Peak
6	5.84	32.67	10.49	0.22	0.00	43.38	60.00	-16.62	Peak



Trace: 6

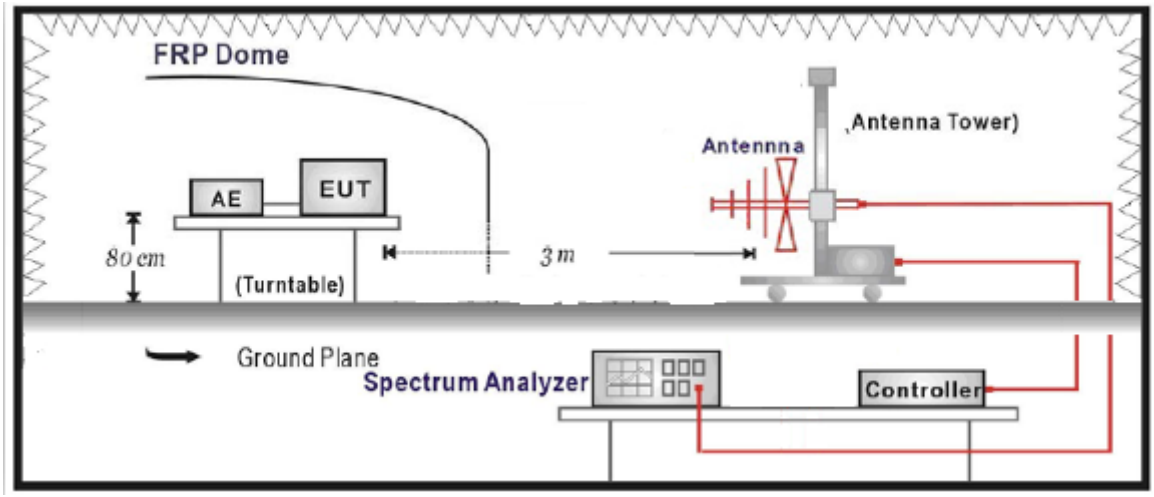
Site : chamber
Condition : FCC P15 CLASS-B (QP) ENV216(N)-20120730 NEUTRAL
EUT :
Model Name : GV500VC
Temp/Humi : 24 ℃ / 53 %
Power Rating: DC 24V
Mode : USB Data Exchange
Memo :

	Freq	Read Level	LISN Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1	0.19	42.56	10.33	0.23	0.00	53.12	64.02	-10.90	Peak
2	0.38	35.74	10.42	0.15	0.00	46.31	58.21	-11.90	Peak
3	0.48	32.66	10.42	0.10	0.00	43.18	56.36	-13.18	Peak
4	0.77	30.55	10.31	0.12	0.00	40.98	56.00	-15.02	Peak
5	6.99	34.01	10.33	0.32	0.00	44.66	60.00	-15.34	Peak
6	12.06	30.39	10.45	0.38	0.00	41.22	60.00	-18.78	Peak

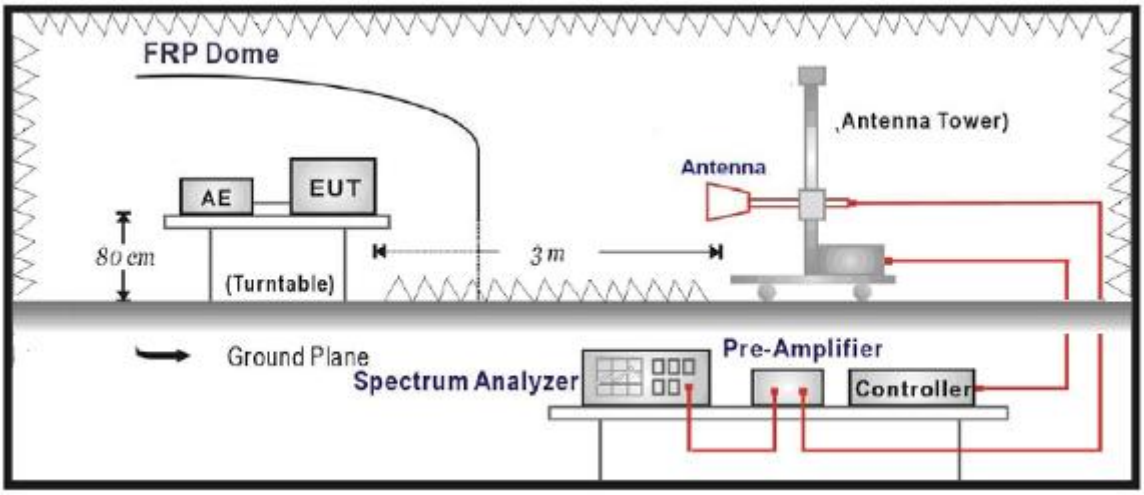
3. RADIATED DISTURBANCE (RE)

3.1 TEST SETUP

30MHz ~ 1GHz:



Above 1GHz:



3.2 LIMITS

Limits for Class B digital devices

Frequency (MHz)	limits at 3m (QP) dB(μV/m)	
30-88	40.0	
88-216	43.5	
216-960	46.0	
Above 960	54.0	
Above 1000	limits at 3m (PEAK) dB(μV/m)	limits at 3m (AV) dB(μV/m)
	74	54

NOTE: 1. The lower limit shall apply at the transition frequency.

2. The limits shown above are based on measuring equipment employing a CISPR quasi-peak detector function for frequencies below or equal to 1000MHz.
3. The limits shown above are based on measuring equipment employing an average detector function for frequencies above 1000MHz.

3.3 TEST PROCEDURE

30MHz ~ 1GHz:

a. The EUT and support equipment were placed on the non-conductive turntable 0.8m above the horizontal metal ground plane at a chamber. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. Broadband antenna (Calibrated Bilog Antenna) was used as receiving antenna.

b. The frequency range from 30MHz to 1GHz was checked. The RBW of the receiver was set at 120kHz. Set the receiver in Peak detector, Max Hold mode. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where EUT radiated the maximum emission, then set the test frequency receiver to QP Detector and record the maximum value.

Above 1GHz:

a. The EUT and support equipment were placed on the non-conductive turntable 0.8m above the ground at a chamber. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. Horn antenna was used as receiving antenna.

b. The frequency range above 1GHz was checked. The RBW of the receiver was set at 1MHz. Set the receiver in Peak detector, Max Hold mode. Record the maximum field strength of all the pre-scan process in the full band when the antenna is 1m and varied in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

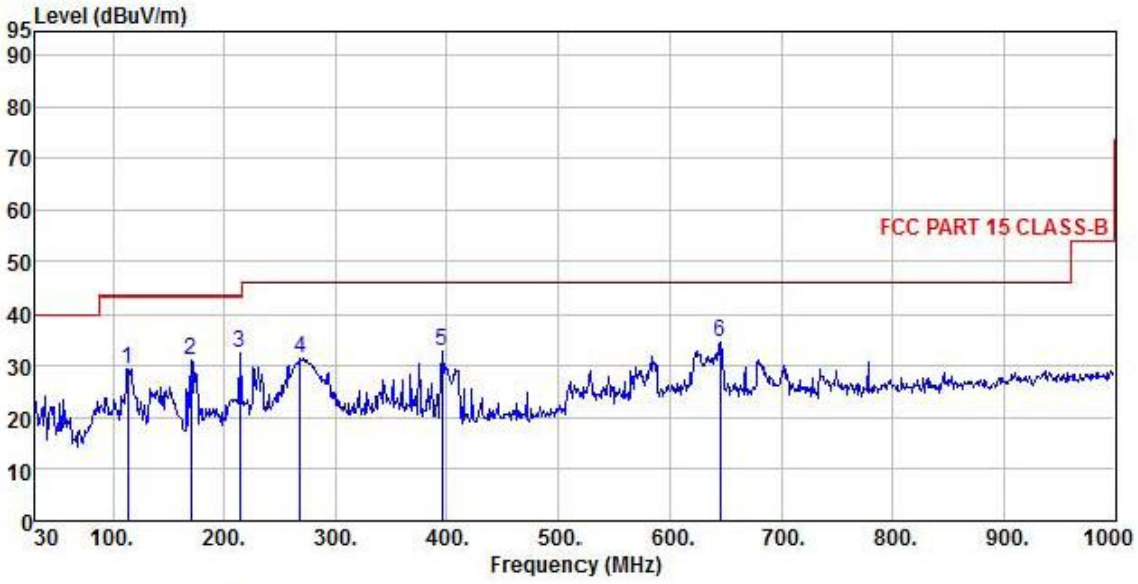
c. For each frequency whose maximum record was higher or close to limit, measure its Average value: rotate the turntable from 0 to 360 degrees to find the degree where EUT radiated the maximum emission, then set the test frequency receiver to EMI Average Detector and record the maximum value.

3.4 TEST RESULT

DC 12V

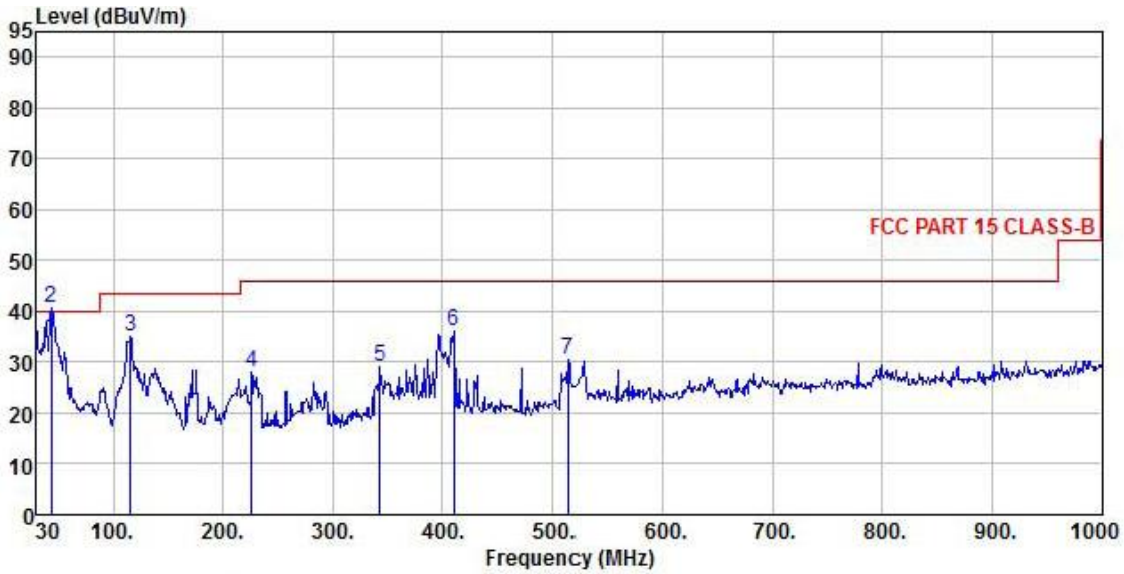
30MHz ~ 1GHz:

Test mode: USB Data Exchange



Site : chamber
Condition : FCC PART 15 CLASS-B 3m VULB9160 HORIZONTAL
EUT :
Model Name : GV500VC
Temp/Humi : 24 ℃ / 53 %
Power Rating: DC 12V
Mode : USB Data Exchange
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB	
1	113.42	16.64	11.45	1.42	0.00	29.51	43.50	-13.99	Peak
2	169.68	15.93	13.33	1.84	0.00	31.10	43.50	-12.40	Peak
3 pp	214.30	19.91	10.65	2.01	0.00	32.57	43.50	-10.93	Peak
4	268.62	16.90	12.40	2.21	0.00	31.51	46.00	-14.49	Peak
5	395.69	15.12	15.23	2.67	0.00	33.02	46.00	-12.98	Peak
6	644.98	11.49	19.53	3.53	0.00	34.55	46.00	-11.45	Peak

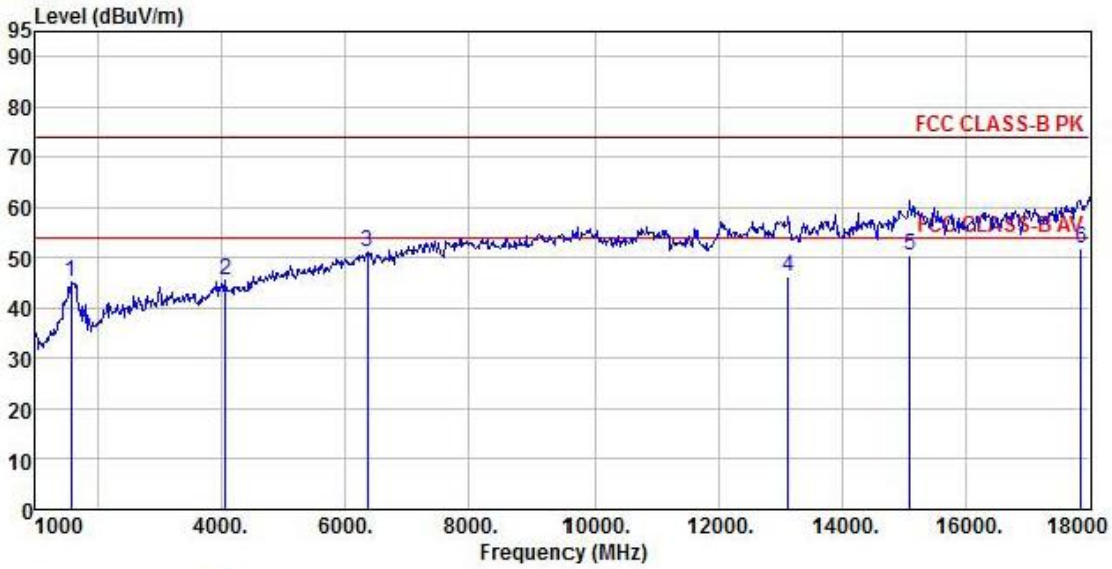


Site : chamber
Condition : FCC PART 15 CLASS-B 3m VULB9160 VERTICAL
EUT :
Model Name : GV500VC
Temp/Humi : 24 ℃ / 53 %
Power Rating: DC 12V
Mode : USB Data Exchange
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB	
1 qp	43.13	21.10	12.73	0.86	0.00	34.69	40.00	-5.31	QP
2 pp	43.58	27.08	12.73	0.87	0.00	40.68	40.00	0.68	Peak
3	115.36	22.07	11.65	1.43	0.00	35.15	43.50	-8.35	Peak
4	225.94	14.80	11.05	2.07	0.00	27.92	46.00	-18.08	Peak
5	343.31	12.51	14.14	2.53	0.00	29.18	46.00	-16.82	Peak
6	410.24	17.78	15.51	2.80	0.00	36.09	46.00	-9.91	Peak

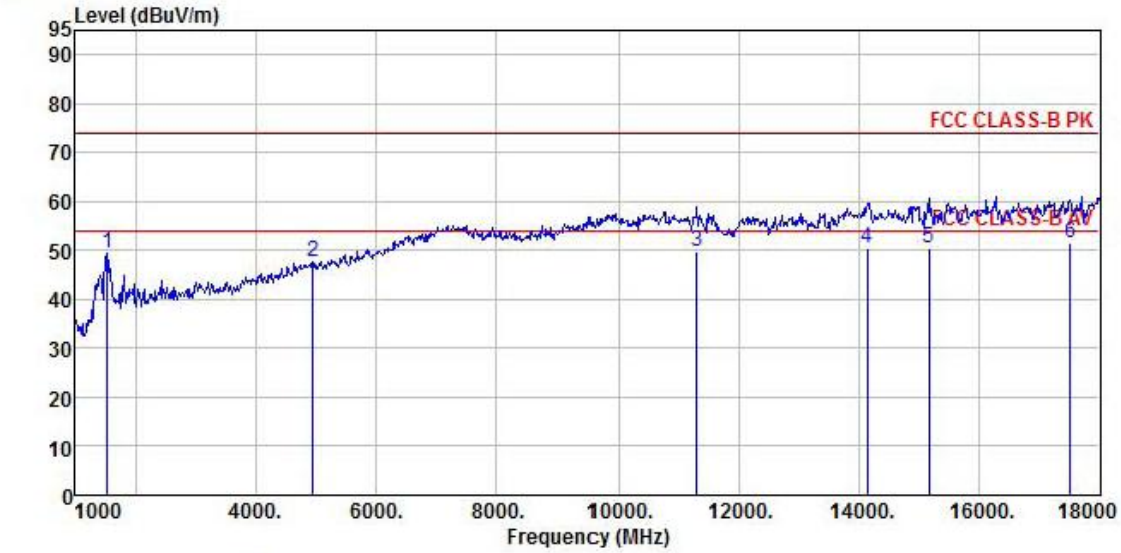
Above 1GHz:

Test mode: USB Data Exchange



Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(942) HORIZONTAL
EUT :
Model Name : GV500VC
Temp/Humi : 24 ℃ / 53 %
Power Rating: DC 12V
Mode : USB Data Exchange
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB	
1	1578.00	52.91	25.02	5.73	38.46	45.20	74.00	-28.80	Peak
2	4060.00	43.66	29.94	9.33	37.47	45.46	74.00	-28.54	Peak
3 pk	6355.00	42.12	33.68	12.02	36.62	51.20	74.00	-22.80	Peak
4	13121.00	27.20	39.60	17.87	38.44	46.23	54.00	-7.77	Average
5	15093.00	30.32	40.49	17.51	37.78	50.54	54.00	-3.46	Average
6 pp	17847.00	23.33	45.97	19.50	36.96	51.84	54.00	-2.16	Average



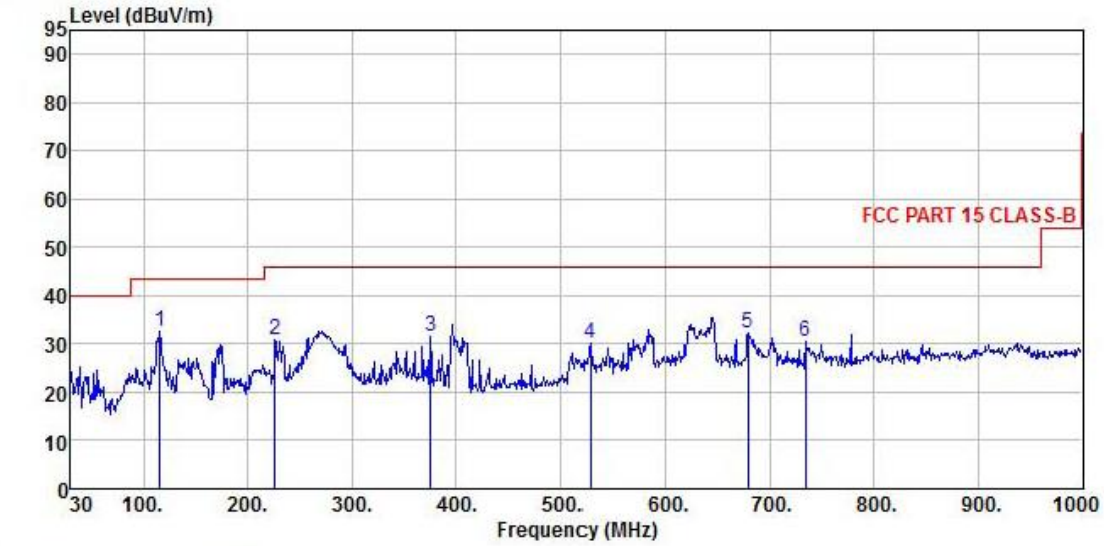
Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(942) VERTICAL
EUT :
Model Name : GV500VC
Temp/Humi : 24 ℃ / 53 %
Power Rating: DC 12V
Mode : USB Data Exchange
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB	
1 pk	1527.00	57.10	25.17	5.74	38.45	49.56	74.00	-24.44	Peak
2	4944.00	42.41	31.64	10.62	37.12	47.55	74.00	-26.45	Peak
3	11302.00	32.83	39.99	16.09	39.05	49.86	54.00	-4.14	Average
4	14141.00	29.07	42.15	17.99	38.56	50.65	54.00	-3.35	Average
5	15161.00	30.09	40.23	18.13	37.84	50.61	54.00	-3.39	Average
6 pp	17507.00	25.99	43.18	19.82	37.54	51.45	54.00	-2.55	Average

DC 24V

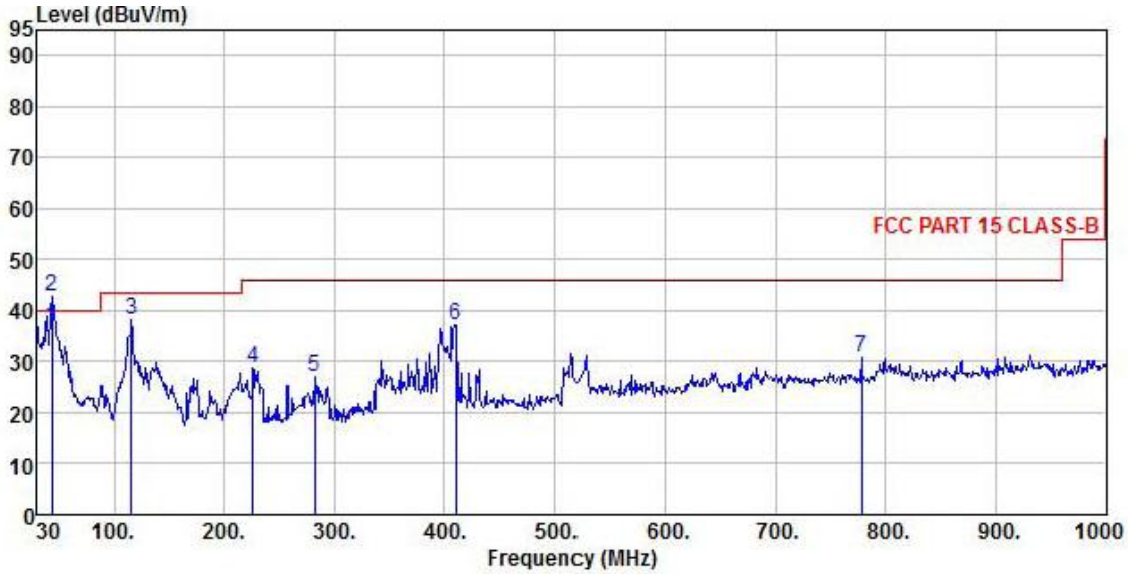
30MHz ~ 1GHz:

Test mode: USB Data Exchange



Site : chamber
Condition : FCC PART 15 CLASS-B 3m VULB9160 HORIZONTAL
EUT :
Model Name : GV500VC
Temp/Humi : 24 ℃ / 53 %
Power Rating: DC 24V
Mode : USB Data Exchange
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB	
1 pp	115.36	19.44	11.65	1.43	0.00	32.52	43.50	-10.98	Peak
2	225.94	17.81	11.05	2.07	0.00	30.93	46.00	-15.07	Peak
3	375.32	13.91	14.73	2.74	0.00	31.38	46.00	-14.62	Peak
4	527.61	9.44	17.43	3.14	0.00	30.01	46.00	-15.99	Peak
5	678.93	8.79	19.87	3.57	0.00	32.23	46.00	-13.77	Peak
6	734.22	5.89	20.89	3.68	0.00	30.46	46.00	-15.54	Peak

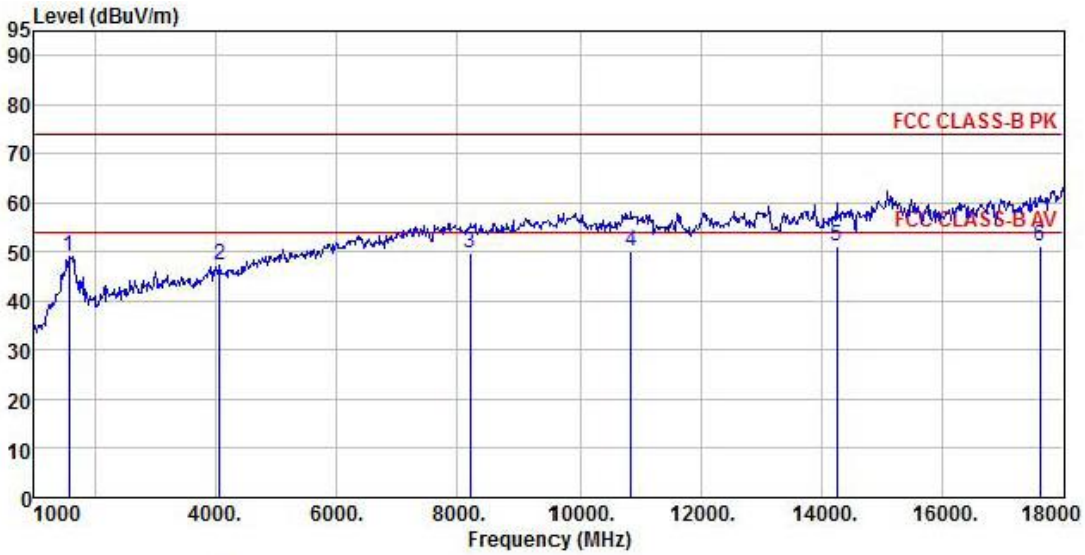


Site : chamber
Condition : FCC PART 15 CLASS-B 3m VULB9160 VERTICAL
EUT :
Model Name : GV500VC
Temp/Humi : 24 ℃ / 53 %
Power Rating: DC 24V
Mode : USB Data Exchange
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB	
1 qp	43.24	23.18	12.73	0.87	0.00	36.78	40.00	-3.22	QP
2 pp	43.58	29.08	12.73	0.87	0.00	42.68	40.00	2.68	Peak
3	115.36	25.07	11.65	1.43	0.00	38.15	43.50	-5.35	Peak
4	225.94	15.80	11.05	2.07	0.00	28.92	46.00	-17.08	Peak
5	282.20	11.88	12.85	2.21	0.00	26.94	46.00	-19.06	Peak
6	410.24	18.78	15.51	2.80	0.00	37.09	46.00	-8.91	Peak
7	777.87	5.54	21.44	3.80	0.00	30.78	46.00	-15.22	Peak

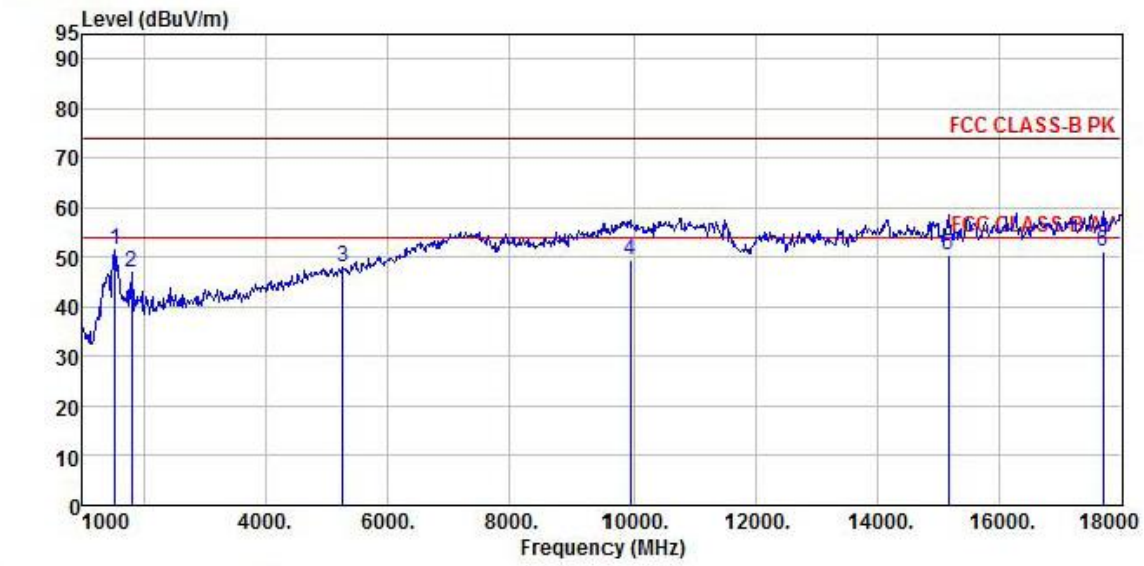
Above 1GHz:

Test mode: USB Data Exchange



Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(942) HORIZONTAL
EUT :
Model Name : GV500VC
Temp/Humi : 24 ℃ / 53 %
Power Rating: DC 24V
Mode : USB Data Exchange
Memo :

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB	
1 pk	1578.00	56.91	25.02	5.73	38.46	49.20	74.00	-24.80	Peak
2	4060.00	45.66	29.94	9.33	37.47	47.46	74.00	-26.54	Peak
3	8208.00	39.83	36.69	13.29	40.08	49.73	54.00	-4.27	Average
4	10843.00	33.33	40.09	15.79	38.98	50.23	54.00	-3.77	Average
5	14243.00	29.25	42.27	18.00	38.46	51.06	54.00	-2.94	Average
6 pp	17609.00	25.91	43.89	18.80	37.36	51.24	54.00	-2.76	Average



Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(942) VERTICAL
EUT :
Model Name : GV500VC
Temp/Humi : 24 ℃ / 53 %
Power Rating: DC 24V
Mode : USB Data Exchange
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB	
1 pk	1527.00	59.10	25.17	5.74	38.45	51.56	74.00	-22.44	Peak
2	1799.00	53.88	25.27	6.20	38.48	46.87	74.00	-27.13	Peak
3	5267.00	42.56	31.73	10.81	37.02	48.08	74.00	-25.92	Peak
4	9942.00	35.46	38.64	14.79	39.49	49.40	54.00	-4.60	Average
5	15161.00	30.09	40.23	18.13	37.84	50.61	54.00	-3.39	Average
6 pp	17694.00	24.29	44.37	19.65	37.22	51.09	54.00	-2.91	Average

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

Please refer to the file named “YQD-GV500VC _Part 15B Setup Photos”.

APPENDIX 2 PHOTOGRAPHS OF EUT

Please refer to the file named “YQD- GV500VC _EUT Photos”.

----End of the report----