

FCC TEST REPORT

Product : 1080p Webcam
Trade mark : GRANDSTREAM
Model/Type reference : GUV3100
FCC ID : YZZGUV3100
Serial Number : N/A
Ratings : DC 5V
Report Number : EED32M001949
Date of Issue : Aug. 13, 2020
Regulations : See below

Test Standards	Results
<input checked="" type="checkbox"/> 47 CFR FCC Part 15 Subpart B	PASS

Prepared for:

Grandstream Networks, Inc.
126 Brookline Ave., 3rd Floor Boston, MA 02215, USA

Prepared by:

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David Wang Check No.:3336801293



Modification Record

No.	Last Report No.	Modification Description
1	EED32M001853	First report
2	EED32M001949	Change the name, model, trade mark, applicant & manufacturer information

All test data come from the report of No.EED32M001853.

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(Note: N/A means not applicable)

1. GENERAL INFORMATION

Applicant:	Grandstream Networks, Inc. 126 Brookline Ave., 3rd Floor Boston, MA 02215, USA
Manufacturer:	Grandstream Networks, Inc. 126 Brookline Ave., 3rd Floor Boston, MA 02215, USA
Product:	1080p Webcam
Trade mark:	GRANDSTREAM
Model/Type reference:	GUV3100
Serial Number:	N/A
Report Number:	EED32M001949
State of Sample(s):	Normal
Sample Received Date:	May 29, 2020
Sample tested Date:	May 29, 2020 to Jun. 28, 2020

The tested sample(s) and the sample information are provided by the client.

2. TEST SUMMARY

The Product has been tested according to the following specifications:

Standard	Test Item	Test Method	Test
FCC 15.107	Conducted Emission	ANSI C63.4:2014	Yes
FCC 15.109	Radiated Emission	ANSI C63.4:2014	Yes

3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. 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	3.1
Radiated disturbance (30MHz to 1GHz)	4.9
Radiated disturbance (1GHz to 6GHz)	4.7

4. PRODUCT INFORMATION AND TEST SETUP

4.1. PRODUCT INFORMATION

Ratings: DC 5V

4.2. TEST SETUP CONFIGURATION

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

4.3. SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	Data Cable	Power Cord
1.	Notebook	Hp	HP14q-bu101TX	5CD812F9L8	---	---

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.

5. FACILITIES AND ACCREDITATIONS

5.1. TEST FACILITY

Centre Testing International Group Co., Ltd
 Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China
 Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385
 No tests were sub-contracted.
 FCC Designation No.: CN1164

The site and apparatus are constructed in conformance with the requirements of ANSI C63.4, CISPR 16-1-1 and other equivalent standards.

5.2. TEST EQUIPMENT LIST

Instrumentation: The following list contains equipments used at CTI for testing. The calibrations of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the manual for the measuring instrument.

Equipment used during the tests:

Shielding Room No. 1 - Conducted Emission Test				
Equipment	Manufacturer	Model	Serial No.	Due Date
Receiver	R&S	ESCI	100435	04/27/2021
LISN	R&S	ENV216	100098	03/04/2021

3M Semi-anechoic Chamber (1)- Radiated disturbance Test				
Equipment	Manufacturer	Model	Serial No.	Due Date
3M Chamber & Accessory Equipment	ETS-LINDGREN	FACT-3	3510	05/29/2022
Spectrum Analyzer	Agilent	E4443A	MY45300910	10/17/2020

Receiver	R&S	ESCI	100435	04/27/2021
TRILOG Broadband Antenna	schwarzbeck	VULB 9163	484	05/22/2021
Multi device Controller	ETS-LINGREN	2090	00024675	---

5.3. LABORATORY ACCREDITATIONS AND LISTINGS

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 is traceable under the ISO/IEC 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

6. CONDUCTED EMISSION TEST

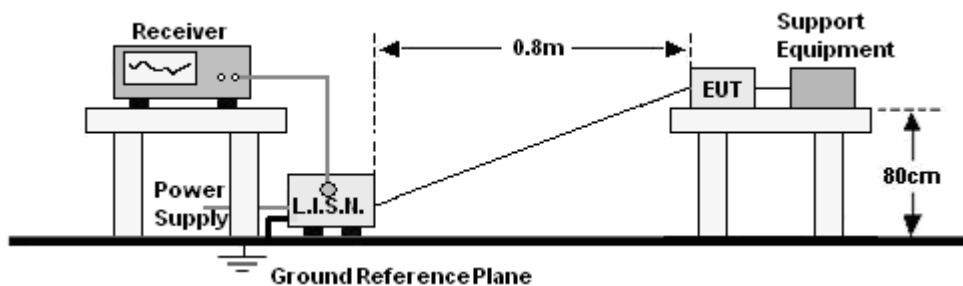
6.1. LIMITS

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.

6.2. BLOCK DIAGRAM OF TEST SETUP

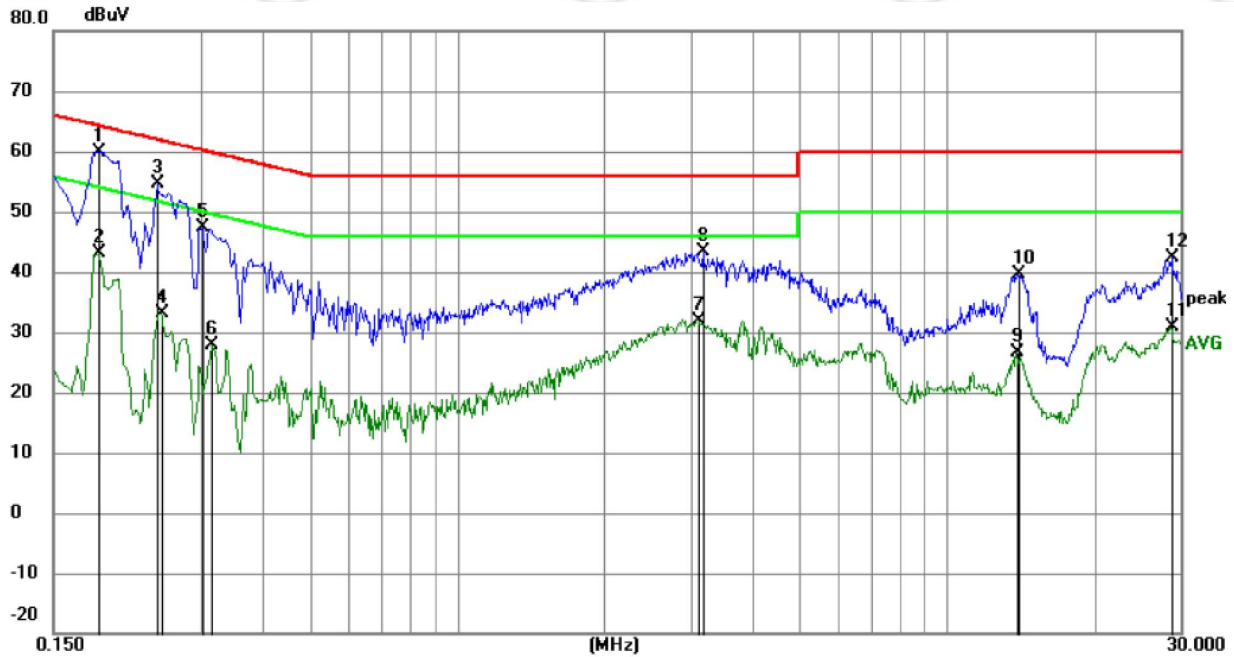


6.3. PROCEDURE OF CONDUCTED EMISSION TEST

- The Product was placed on a nonconductive table above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N.).
- The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
- For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

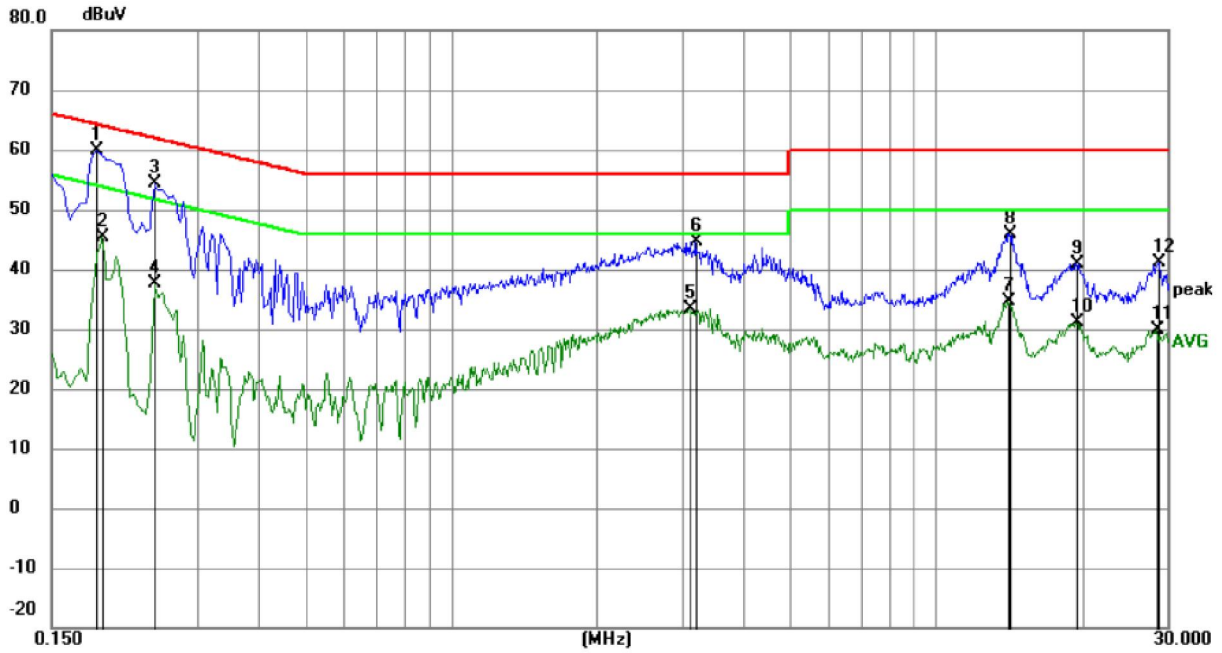
6.4. GRAPHS AND DATA

Product : 1080p Webcam
Model/Type reference : GUV3100
Power : AC 120V/60Hz **Temperature** : 24°C
Mode : Video **Humidity** : 52%
Phase : L1 **Press** : 101kPa



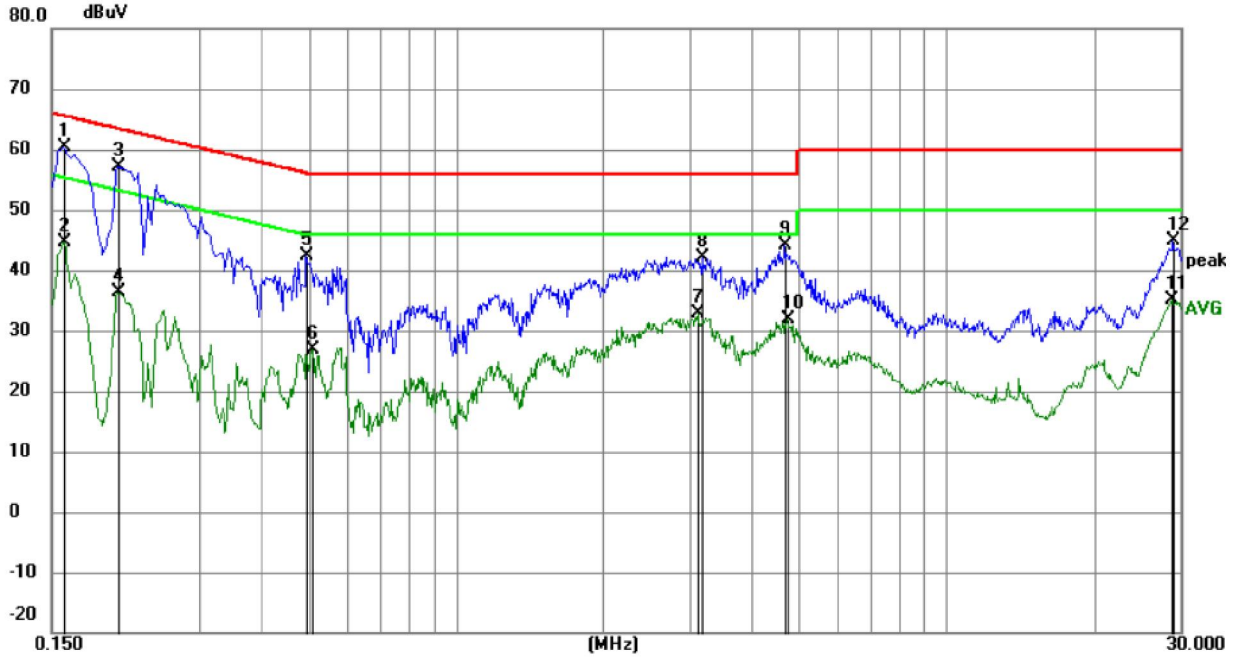
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.1860	50.09	9.87	59.96	64.21	-4.25	peak	
2		0.1860	33.18	9.87	43.05	54.21	-11.16	AVG	
3		0.2445	44.57	9.96	54.53	61.94	-7.41	peak	
4		0.2490	23.22	9.97	33.19	51.79	-18.60	AVG	
5		0.3030	37.19	10.08	47.27	60.16	-12.89	peak	
6		0.3165	17.74	10.06	27.80	49.80	-22.00	AVG	
7		3.1155	22.05	9.78	31.83	46.00	-14.17	AVG	
8		3.1829	33.58	9.78	43.36	56.00	-12.64	peak	
9		13.8975	16.88	9.83	26.71	50.00	-23.29	AVG	
10		13.9695	29.71	9.83	39.54	60.00	-20.46	peak	
11		28.7205	20.78	10.02	30.80	50.00	-19.20	AVG	
12		28.8825	32.28	10.03	42.31	60.00	-17.69	peak	

Product : 1080p Webcam
Model/Type reference : GUV3100
Power : AC 120V/60Hz **Temperature** : 24°C
Mode : Video **Humidity** : 52%
Phase : N **Press** : 101kPa



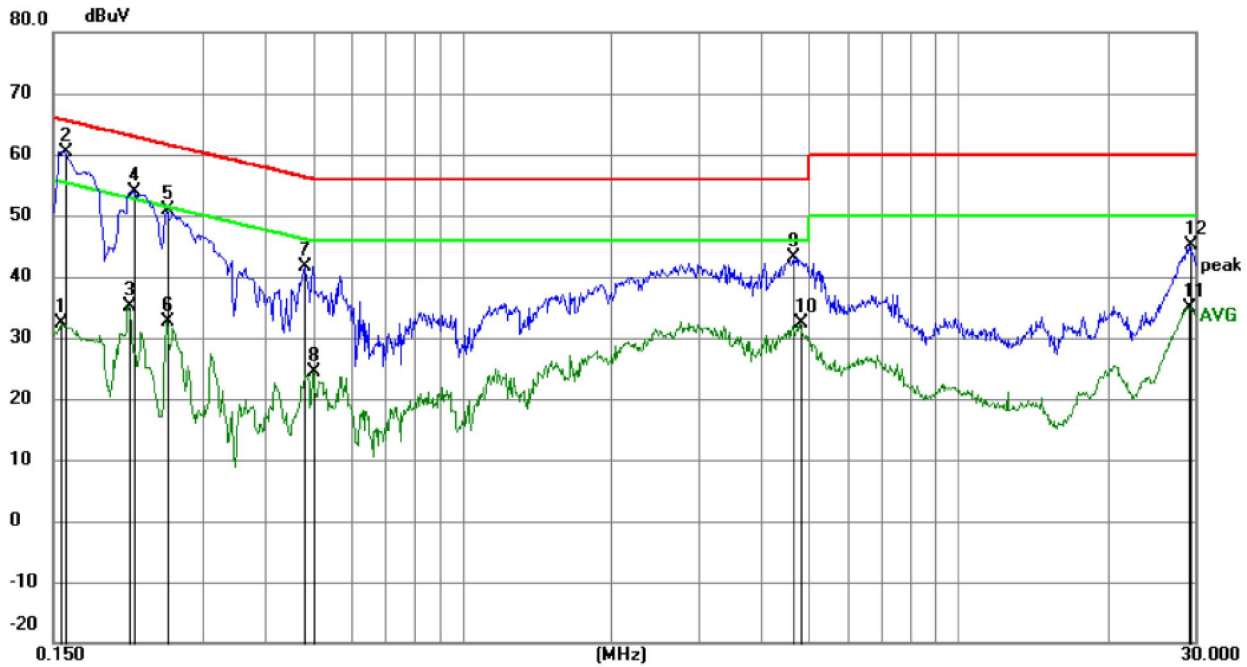
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.1860	50.03	9.87	59.90	64.21	-4.31	peak	
2		0.1905	35.59	9.86	45.45	54.01	-8.56	AVG	
3		0.2445	44.49	9.96	54.45	61.94	-7.49	peak	
4		0.2445	27.76	9.96	37.72	51.94	-14.22	AVG	
5		3.1065	23.54	9.78	33.32	46.00	-12.68	AVG	
6		3.1920	34.85	9.78	44.63	56.00	-11.37	peak	
7		14.0820	24.73	9.83	34.56	50.00	-15.44	AVG	
8		14.1540	36.10	9.83	45.93	60.00	-14.07	peak	
9		19.4550	31.01	9.85	40.86	60.00	-19.14	peak	
10		19.4550	21.34	9.85	31.19	50.00	-18.81	AVG	
11		28.5405	19.96	10.02	29.98	50.00	-20.02	AVG	
12		28.8060	31.07	10.03	41.10	60.00	-18.90	peak	

Product : 1080p Webcam
Model/Type reference : GUV3100
Power : AC 240V/60Hz **Temperature** : 24℃
Mode : Video **Humidity** : 52%
Phase : L1 **Press** : 101kPa



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.1590	50.48	9.88	60.36	65.52	-5.16	peak	
2		0.1590	34.82	9.88	44.70	55.52	-10.82	AVG	
3		0.2040	47.33	9.87	57.20	63.45	-6.25	peak	
4		0.2040	26.47	9.87	36.34	53.45	-17.11	AVG	
5		0.4965	32.24	10.04	42.28	56.06	-13.78	peak	
6		0.5100	16.93	10.04	26.97	46.00	-19.03	AVG	
7		3.1110	23.07	9.78	32.85	46.00	-13.15	AVG	
8		3.1875	32.27	9.78	42.05	56.00	-13.95	peak	
9		4.6815	34.39	9.77	44.16	56.00	-11.84	peak	
10		4.7399	22.08	9.77	31.85	46.00	-14.15	AVG	
11		28.8285	25.06	10.03	35.09	50.00	-14.91	AVG	
12		28.9455	34.92	10.03	44.95	60.00	-15.05	peak	

Product : 1080p Webcam
Model/Type reference : GUV3100
Power : AC 240V/60Hz **Temperature** : 24°C
Mode : Video **Humidity** : 52%
Phase : N **Press** : 101kPa



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1556	22.39	9.88	32.27	55.70	-23.43	AVG	
2	*	0.1590	50.55	9.88	60.43	65.52	-5.09	peak	
3		0.2130	25.35	9.89	35.24	53.09	-17.85	AVG	
4		0.2185	43.96	9.90	53.86	62.88	-9.02	peak	
5		0.2535	40.93	9.98	50.91	61.64	-10.73	peak	
6		0.2535	22.60	9.98	32.58	51.64	-19.06	AVG	
7		0.4830	31.63	10.02	41.65	56.29	-14.64	peak	
8		0.5010	14.31	10.05	24.36	46.00	-21.64	AVG	
9		4.6635	33.47	9.77	43.24	56.00	-12.76	peak	
10		4.8120	22.62	9.77	32.39	46.00	-13.61	AVG	
11		29.0760	24.96	10.03	34.99	50.00	-15.01	AVG	
12		29.3415	35.20	10.04	45.24	60.00	-14.76	peak	

Note:

1. Margin=Measurement-Limit.
2. Measurement=Reading_Level+Correct Factor.
3. Correct Factor=Cable Factor.+Lisn Factor.

7. RADIATED EMISSION TEST

7.1. LIMITS

For unintentional device , according to §15.109 (b) The field strength of radiated emissions from a Class A digital device, as determined at a distance of 10 meters, shall not exceed the following values.

According to FCC 15.31 section(1), at frequencies at or above 30 MHz measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

According to FCC 15.31 section(2), frequencies below 30 MHz, performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

According to 15.35 Measurement detector functions and bandwidths section (b). Unless otherwise specified, e.g., see §§15.250, 15.252, 15.253(d), 15.255, 15.256, and 15.509 through 15.519 of this part, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

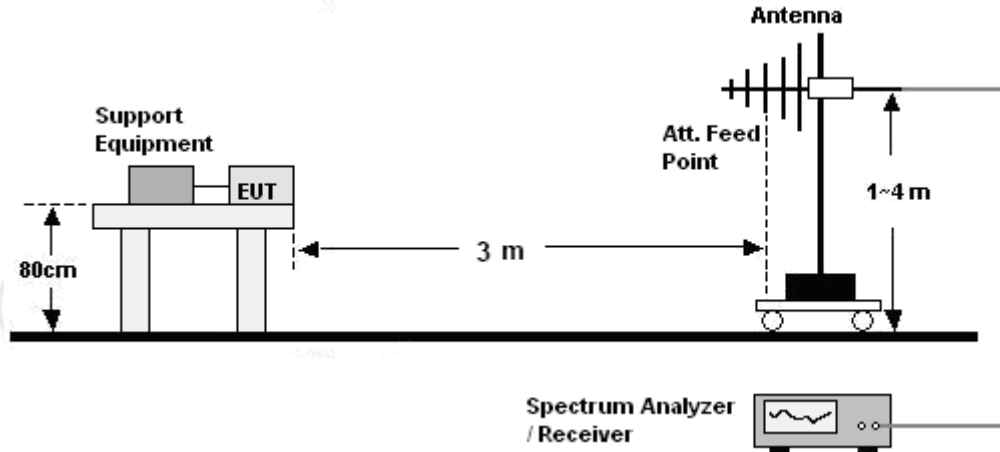
Limits for Class A digital devices

Frequency (MHz)	limits at 3m dB(μV/m)
30-88	49.5
88-216	54.0
216-960	56.9
Above 960	60.0

- 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.

7.2. BLOCK DIAGRAM OF TEST SETUP

30MHz ~ 1GHz:



7.3. PROCEDURE OF RADIATED EMISSION TEST

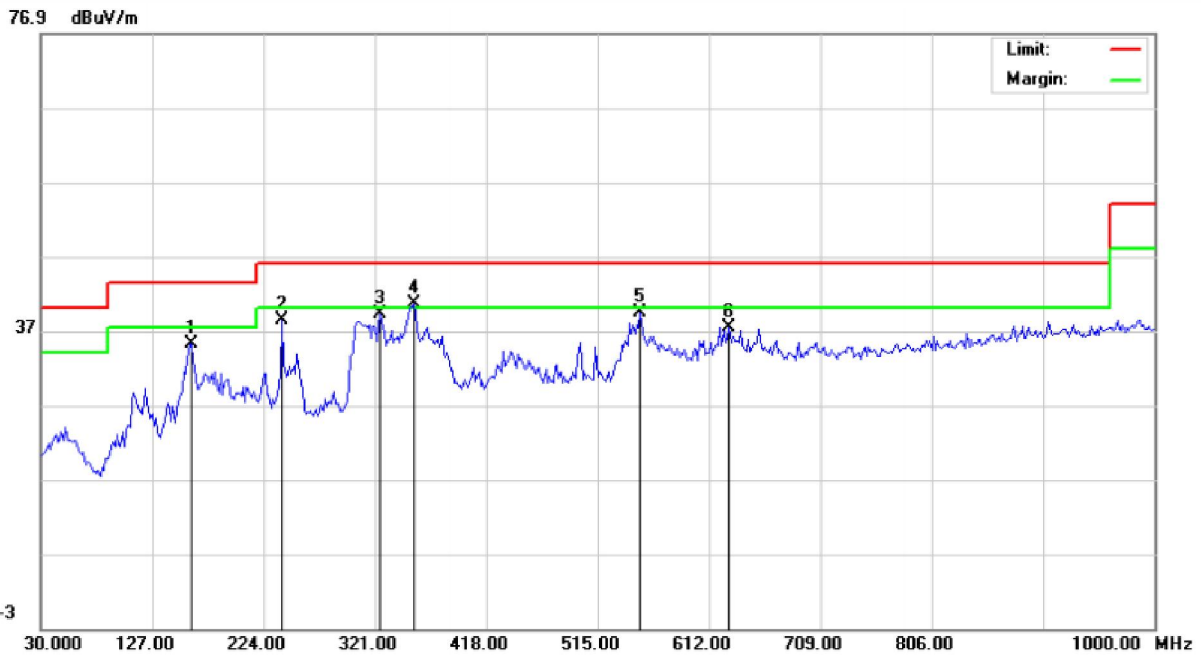
30MHz ~ 1GHz:

- The Product was placed on the non-conductive turntable 0.8 m above the ground at a chamber.
- Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. 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.
- 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 Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

7.4. GRAPHS AND DATA

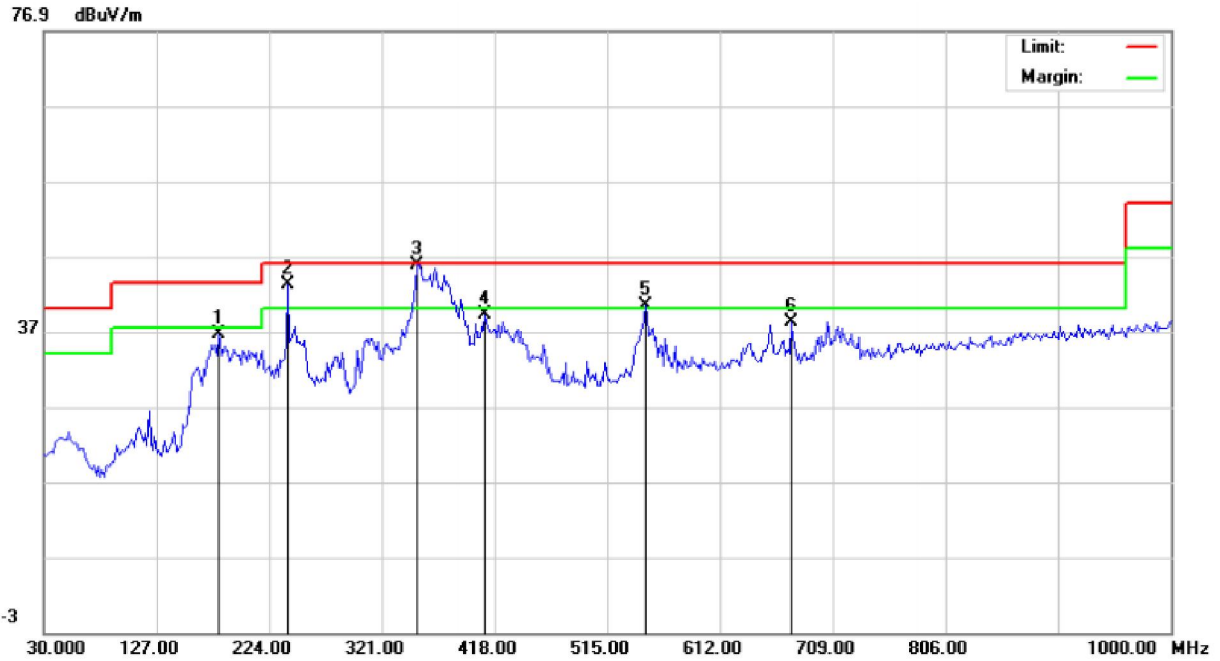
30MHz ~ 1GHz:

Product : 1080p Webcam
Model/Type reference : GUV3100
Power : DC 5V **Temperature** : 22°C
Mode : Video **Humidity** : 50%
Polarization : Horizontal **Press** : 101kPa



No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	160.9500	24.51			10.71	35.22			43.50			-8.28		P
2	240.1667	23.52			14.89	38.41			46.00			-7.59		P
3	325.8500	22.18			16.93	39.11			46.00			-6.89		P
4	354.9500	22.77			17.80	40.57			46.00			-5.43		P
5	552.1833	17.27			22.05	39.32			46.00			-6.68		P
6	629.7833	14.01			23.44	37.45			46.00			-8.55		P

Product : 1080p Webcam
Model/Type reference : GUV3100
Power : DC 5V
Temperature : 22°C
Mode : Video
Humidity : 50%
Polarization : Vertical
Press : 101kPa



No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	180.3500	24.39			12.15	36.54			43.50			-6.96		P
2	240.1667	28.35	17.64		14.89	43.24	32.53		46.00			-13.47		P
3	351.7167	28.16	23.10		17.73	45.89	40.83		46.00			-5.17		P
4	409.9166	20.20			18.94	39.14			46.00			-6.86		P
5	547.3333	18.41			21.94	40.35			46.00			-5.65		P
6	673.4333	14.37			23.88	38.25			46.00			-7.75		P

Note:

1. Margin=Measurement-Limit.
2. Measurement=Reading_Level+Correct Factor.
3. Correct Factor=Ant Factor+Cable loss.