



# **11. Radiated Spurious Emission**

## **11.1 Measurement Limit**

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

Frequency (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.

	Applicable to	Limit			
Restricted	789033 D02 General UNII Test	Field stre	ength at 3m (dBuV/m)		
bands	Procedures New Rules v02r01	PK: 74	AV: 54		
	Applicable to	EIRP Limit (dBm/MHz)	Equivalent field Strength at 3m (dBuV/m)		
Out of the	FCC 15.407(b)(1)		PK: 68.2		
restricted bands	15.407(b)(2)	PK: -27			
	15.407(b)(3)				
	15.407(b)(4)	See Note 2			

Note 1: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000 \sqrt{30 P}}{3} \quad \mu V/m, \text{ where P is the eirp (Watts).}$$

Note 2: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at 5 MHz above or below the band edge.



## **11.2 Measurement Procedure**

- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High Low scan is not required in this case.



The following table is the setting of spectrum analyzer and receiver.

Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04.Section G) Unwanted emissions measurement.

# <u>Procedure for Unwanted Emissions Measurements Below 1000MHz:</u>

- RBW = 120 kHz
- VBW = 300 kHz
- Detector = Peak
- Trace mode = max hold

# <u>Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz:</u>

- RBW = 1 MHz
- VBW ≥ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

# • Procedures for Average Unwanted Emissions Measurements Above 1000MHz:

- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.

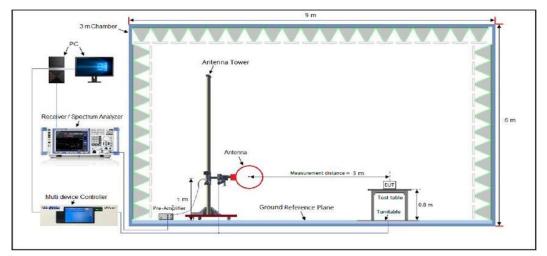
• VBW  $\geq$  1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

- <u>Procedures for Average Unwanted Emissions Measurements Above 1000MHz:</u>
  - RBW = 1 MHz
  - VBW = 3 MHz Detector = power averaging (rms), set span/(# of points in sweep)  $\geq$  RBW/2.
  - Averaging type = power averaging (RMS)
  - The correction factor shall be offset is  $10 \log (1/x)$ , where x is the duty cycle.

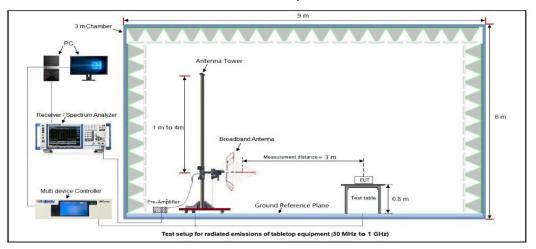


# 11.3 Measurement Setup (Block Diagram of Configuration)

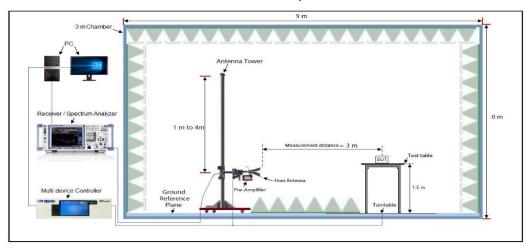
Radiated Emission Test Setup 9kHz-30MHz



### Radiated Emission Test Setup 30MHz-1000MHz



### Radiated Emission Test Setup Above 1000MHz



Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

 Attestation of Global Compliance(Shenzhen)Co., Ltd

 Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd

 Tel: +86-755 2523 4088
 E-mail: agc@agccert.com



## **11.4 Measurement Result**

# Radiated Emission Below 30MHz

The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.

		R	adiated Emissi	ion Test Resi	ults at 30MHz	-1GHz			
EUT N	lame	IP Camera N			Model Nan	ne	RLC-810	RLC-810WA	
Tempe	erature	25°C			Relative H	umidity	nidity 55.4%		
Press	ure	960hPa			Test Voltag	je	Normal V	/oltage	
Test N	lode	802.11n(20N	1Hz)_5180MHz		Polarity:		Horizonta	al	
		QP Limit — Horizor DP Detector	100M	FCC PART 15		de la companya		16	
Peak I	Data List								
Peak I NO.	Data List Freq. IMHz			Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle	Polarity	
		] [dBµV/	m] [dB]	Limit [dBµV/m] 43.50	Margin [dB] 16.82	Height [cm] 100	Angle [°] 129	Polarity Horizontal	
NO.	Freq. [MHz	] [dBµV/ 1 26.68	m] [dB] 3 21.07	[dBµV/m]	[dB]	[cm]	[°]		
NO. 1	Freq. [MHz 100.8	] [dBµV/ 1 26.68 8 27.96	[dB]       3     21.07       5     13.02	[dBµV/m] 43.50	[dB] 16.82	[cm] 100	[°] 129	Horizontal	
NO. 1 2	Freq. [MHz 100.8 189.0	] [dBμV/ 1 26.68 8 27.96 5 37.65	[dB]       3     21.07       5     13.02       5     16.07	[dBµV/m] 43.50 43.50	[dB] 16.82 15.54	[cm] 100 100	[°] 129 133	Horizontal	
NO. 1 2 3	Freq. [MHz 100.8 189.0 296.7	] [dBμV/ 1 26.68 8 27.96 5 37.65 8 35.84	[dB]       3     21.07       5     13.02       5     16.07       4     19.78	[dBµV/m] 43.50 43.50 46.00	[dB] 16.82 15.54 8.35	[cm] 100 100 100	[°] 129 133 306	Horizontal Horizontal Horizontal	
NO. 1 2 3 4	Freq. [MHz 100.8 189.0 296.7 353.9	[dBμV/]       1     26.68       8     27.96       5     37.65       8     35.84       8     44.25	[dB]       3     21.07       5     13.02       5     16.07       4     19.78       5     28.50	[dBµV/m] 43.50 43.50 46.00 46.00	[dB] 16.82 15.54 8.35 10.16	[cm] 100 100 100 100	[°] 129 133 306 90	Horizontal Horizontal Horizontal Horizontal	
NO. 1 2 3 4 5 6	Freq. [MHz 100.8 189.04 296.75 353.94 606.14	[dBμV/]       1     26.68       8     27.96       5     37.65       8     35.84       8     44.25	[dB]       3     21.07       5     13.02       5     16.07       4     19.78       5     28.50	[dBµV/m] 43.50 43.50 46.00 46.00 46.00	[dB] 16.82 15.54 8.35 10.16 1.75	[cm] 100 100 100 100 100	[°] 129 133 306 90 137	Horizontal Horizontal Horizontal Horizontal Horizontal	
NO. 1 2 3 4 5 6	Freq. [MHz 100.8 189.04 296.75 353.94 606.14 880.65	[dBμV/]       1     26.68       8     27.96       5     37.65       8     35.84       8     44.25       9     39.05	[dB]       3     21.07       3     13.02       5     16.07       4     19.78       5     28.50       5     33.22	[dBµV/m] 43.50 43.50 46.00 46.00 46.00	[dB] 16.82 15.54 8.35 10.16 1.75	[cm] 100 100 100 100 100	[°] 129 133 306 90 137	Horizontal Horizontal Horizontal Horizontal Horizontal	

**Result: Pass** been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

 Attestation of Global Compliance(Shenzhen)Co., Ltd

 Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd

 Tel: +86-755 2523 4088
 E-mail: agc@agccert.com

 Web: http://www.agccert.com/



	Radiated Emission Test Results at 30MHz-1GHz								
EUT N	ame	IP Camera Model			Model Nan	ne	RLC-810	WA	
Tempe	erature	25°	С			Relative H	umidity	55.4%	
Pressu	ure	960	hPa			Test Voltag	ge	Normal V	oltage
Test M	lode	802	.11n(20MHz)_	_5180MHz		Polarity:		Vertical	
Test Mode     802.11n(20MHz)_5180MHz     Polarity:     Vertical							16		
Peak D	Data List								
NO.	Freq [MHz		Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	34.85	5	29.30	10.75	40.00	10.70	100	195	Vertical

40.00

40.00

43.50

43.50

46.00

5.11

10.59

12.51

13.02

6.69

100

100

100

100

100

129

9

74

62

184

Vertical

Vertical

Vertical

Vertical

Vertical

# Result: Pass

### Note:

2

3

4

5

6

45.52

86.26

128.94

189.08

615.88

1. Factor=Antenna Factor + Cable loss, Margin=Limit-Level.

34.89

29.41

30.99

30.48

39.31

2. All test modes had been pre-tested, refer to chapter 5 of the report for details.

12.62

12.37

18.52

15.02

26.32



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20_5180MHz	Antenna	Horizontal/Vertical

# **Radiated Emissions Test Results Above 1GHz**

## Radiated Emission Above 1GHz–Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type		
10360.042	46.29	9.14	55.43	68.20	-12.77	peak		
15540.063	40.21	10.22	50.43	74.00	-23.57	peak		
15540.063	31.85	10.22	42.07	54.00	-11.93	AVG		
Remark:								
Factor = Antenna Factor + Cable Loss – Pre-amplifier.								

## Radiated Emission Above 1GHz–Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type			
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type			
10360.042	46.94	9.14	56.08	68.20	-12.12	peak			
15540.063	41.07	10.22	51.29	74.00	-22.71	peak			
15540.063	32.48	10.22	42.70	54.00	-11.30	AVG			
Remark:	Remark:								
Factor = Antenna Factor + Cable Loss – Pre-amplifier.									

### **Result: Pass**



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20_5200MHz	Antenna	Horizontal/Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type		
10400.042	47.25	9.14	56.39	68.20	-11.81	peak		
15600.063	31.46	10.22	41.68	74.00	-32.32	peak		
15600.063	33.48	10.22	43.70	54.00	-10.30	AVG		
Remark:	Remark:							
Factor = Antenna Factor + Cable Loss – Pre-amplifier.								

# Radiated Emission Above 1GHz–Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin				
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type			
10400.042	47.21	9.14	56.35	68.20	-11.85	peak			
15600.063	40.35	10.22	50.57	74.00	-23.43	peak			
15600.063	31.46	10.22	41.68	54.00	-12.32	AVG			
Remark:	Remark:								
Factor = Antenna Factor + Cable Loss – Pre-amplifier.									

# Result: Pass



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20_5240MHz	Antenna	Horizontal/Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type	
10480.042	48.31	9.27	57.58	68.20	-10.62	peak	
15720.063	42.15	10.38	52.53	74.00	-21.47	peak	
15720.063	32.46	10.38	42.84	54.00	-11.16	AVG	
Remark:							
Factor = Antenna Factor + Cable Loss – Pre-amplifier.							

# Radiated Emission Above 1GHz–Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
10480.042	47.21	9.27	56.48	68.20	-11.72	peak
15720.063	41.36	10.38	51.74	74.00	-22.26	peak
15720.063	32.47	10.38	42.85	54.00	-11.15	AVG
Remark:						
Factor = Anter	nna Factor + Cabl	e Loss – Pre-	amplifier.			

# Result: Pass



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20_5260MHz	Antenna	Horizontal/Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
10520.022	46.28	9.14	55.42	68.20	-12.78	peak
15780.054	41.52	10.22	51.74	74.00	-22.26	peak
15780.054	32.46	10.22	42.68	54.00	-11.32	AVG
Demeril						
Remark:						
Factor = Anter	nna Factor + Cabl	e Loss – Pre-a	amplifier.			

# Radiated Emission Above 1GHz–Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
10520.022	49.64	9.14	58.78	68.20	-9.42	peak
15780.054	42.34	10.22	52.56	74.00	-21.44	peak
15780.054	32.46	10.22	42.68	54.00	-11.32	AVG
Remark:						
Factor = Anter	nna Factor + Cabl	e Loss – Pre-	amplifier.			

# Result: Pass



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20_5300MHz	Antenna	Horizontal/Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
10600.022	46.25	9.14	55.39	74.00	-18.61	peak
10600.022	32.46	9.14	41.60	54.00	-12.40	AVG
15900.045	49.32	10.22	59.54	74.00	-14.46	peak
15900.045	31.45	10.22	41.67	54.00	-12.33	AVG
Remark:						
actor = Anter	nna Factor + Cabl	e Loss – Pre-	amplifier.			

# Radiated Emission Above 1GHz–Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
10600.022	45.31	9.14	54.45	74.00	-19.55	peak
10600.022	36.58	9.14	45.72	54.00	-8.28	AVG
15900.045	41.05	10.22	51.27	74.00	-22.73	peak
15900.045	32.49	10.22	42.71	54.00	-11.29	AVG
Domorki						
Remark:						
actor = Anter	nna Factor + Cabl	e Loss – Pre-	amplifier.			

## Result: Pass



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20_5320MHz	Antenna	Horizontal/Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type			
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type			
10640.015	47.64	9.14	56.78	74.00	-17.22	peak			
10640.015	36.21	9.14	45.35	54.00	-8.65	AVG			
15900.045	41.05	10.22	51.27	74.00	-22.73	peak			
15900.045	32.66	10.22	42.88	54.00	-11.12	AVG			
Remark:									
Factor = Antenna Factor + Cable Loss – Pre-amplifier.									

# Radiated Emission Above 1GHz–Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
10640.015	46.32	9.14	55.46	74.00	-18.54	peak
10640.015	35.14	9.14	44.28	54.00	-9.72	AVG
15900.045	41.05	10.22	51.27	74.00	-22.73	peak
15900.045	32.49	10.22	42.71	54.00	-11.29	AVG
Remark:	• •					•
Factor = Anter	nna Factor + Cabl	e Loss – Pre-	amplifier.			

## Result: Pass



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20_5500MHz	Antenna	Horizontal/Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
11000.056	47.64	9.14	56.78	74.00	-17.22	peak
11000.056	32.15	9.14	41.29	54.00	-12.71	AVG
16500.023	42.15	10.22	52.37	68.20	-15.83	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

# Radiated Emission Above 1GHz–Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
11000.056	48.63	9.14	57.77	74.00	-16.23	peak
11000.056	37.45	9.14	46.59	54.00	-7.41	AVG
16500.023	41.05	10.22	51.27	68.20	-16.93	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

# Result: Pass



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20_5580MHz	Antenna	Horizontal/Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	- Value Type
11200.022	46.28	9.14	55.42	74.00	-18.58	peak
11200.022	35.24	9.14	44.38	54.00	-9.62	AVG
16800.025	40.24	10.22	50.46	68.20	-17.74	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

# Radiated Emission Above 1GHz–Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
11200.022	47.52	9.14	56.66	74.00	-17.34	peak
11200.022	35.99	9.14	45.13	54.00	-8.87	AVG
16800.025	42.58	10.22	52.80	68.20	-15.40	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

# Result: Pass



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.1n20_5700MHz	Antenna	Horizontal/Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
11400.025	47.64	9.14	56.78	74.00	-17.22	peak
11400.025	36.85	9.14	45.99	54.00	-8.01	AVG
17100.056	41.25	10.22	51.47	68.20	-16.73	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

# Radiated Emission Above 1GHz–Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
11400.025	48.64	9.14	57.78	74.00	-16.22	peak
11400.025	39.21	9.14	48.35	54.00	-5.65	AVG
17100.056	42.57	10.22	52.79	68.20	-15.41	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

# Result: Pass



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20_5745MHz	Antenna	Horizontal/Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
11490.042	45.26	9.42	54.68	74.00	-19.32	peak
11490.042	35.24	9.42	44.66	54.00	-9.34	AVG
17235.063	41.05	10.51	51.56	68.20	-16.64	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

# Radiated Emission Above 1GHz–Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
11490.042	46.25	9.42	55.67	74.00	-18.33	peak
11490.042	35.24	9.42	44.66	54.00	-9.34	AVG
17235.063	30.69	10.51	41.20	68.20	-27.00	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

### Result: Pass



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20_5785MHz	Antenna	Horizontal/Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type	
11570.042	47.54	9.42	56.96	74.00	-17.04	peak	
11570.042	36.21	9.42	45.63	54.00	-8.37	AVG	
17355.063	42.19	10.51	52.70	68.20	-15.50	peak	
Remark:							
Factor = Antenna Factor + Cable Loss – Pre-amplifier.							

# Radiated Emission Above 1GHz–Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
11570.042	46.28	9.42	55.70	74.00	-18.30	peak
11570.042	36.24	9.42	45.66	54.00	-8.34	AVG
17355.063	41.97	10.51	52.48	68.20	-15.72	peak
Remark:						
Factor = Anter	ina Factor + Cabl	e Loss – Pre-a	amplifier.			

### Result: Pass



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20_5825MHz	Antenna	Horizontal/Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
11650.042	48.34	9.62	57.96	74.00	-16.04	peak
11650.042	36.25	9.62	45.87	54.00	-8.13	AVG
17475.063	36.15	10.75	46.90	68.20	-21.30	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

# Radiated Emission Above 1GHz–Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
11650.042	46.25	9.62	55.87	74.00	-18.13	peak
11650.042	35.27	9.62	44.89	54.00	-9.11	AVG
17475.063	40.26	10.75	51.01	68.20	-17.19	peak
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

# Result: Pass

### Note:

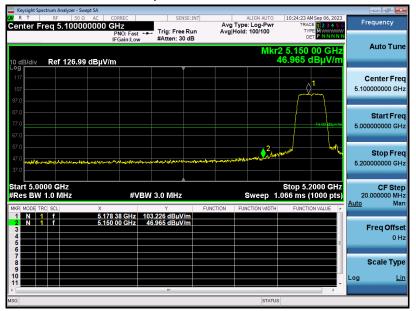
- 1. The amplitude of other spurious emissions from 1GHz to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.
- 2. Factor = Antenna Factor + Cable loss Amplifier gain, Margin=Emission Level-Limit.
- 3. The "Factor" value can be calculated automatically by software of measurement system.
- 4. All test modes had been pre-tested. Refer to chapter 5 of the report for details.



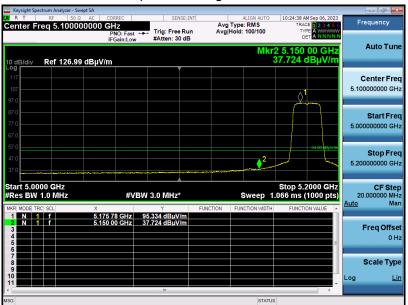
EUT Name	IP Camera	Model Name	RLC-810WA		
Temperature	25°C	Relative Humidity	55.4%		
Pressure	960hPa	Test Voltage	Normal Voltage		
Test Mode	802.11n20_5180MHz	Antenna	Horizontal		

# Test Result for Band edge Emission at Restricted bands

## Test Graph for Peak Measurement



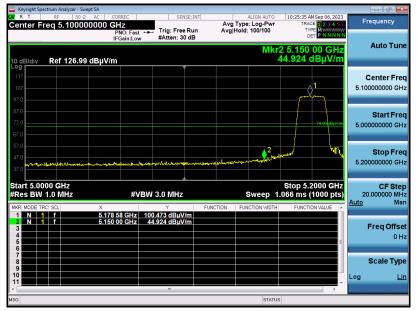
### Test Graph for Average Measurement



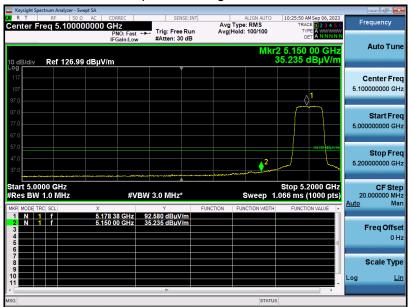
# Result: Pass



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20_5180MHz	Antenna	Vertical



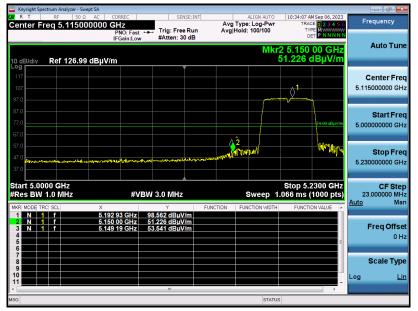
Test Graph for Average Measurement



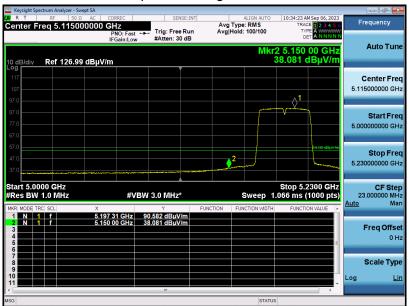
# Result: Pass



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n40_5190MHz	Antenna	Horizontal



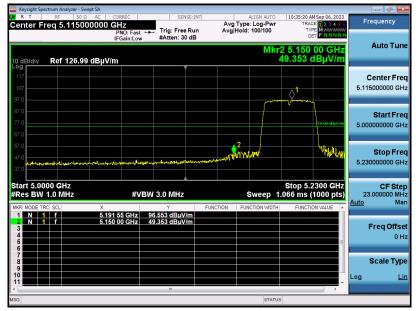
Test Graph for Average Measurement



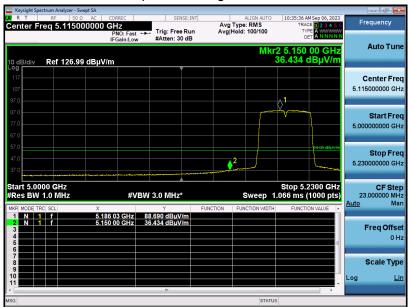
# Result: Pass



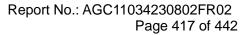
EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n40_5190MHz	Antenna	Vertical



Test Graph for Average Measurement



# Result: Pass

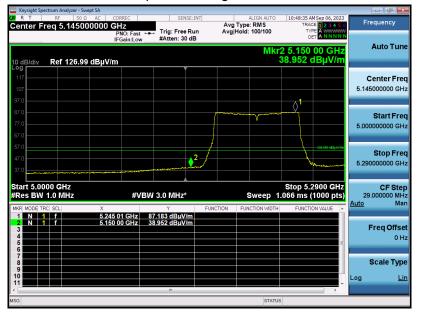




EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11ac80_5210MHz	Antenna	Horizontal



Test Graph for Average Measurement



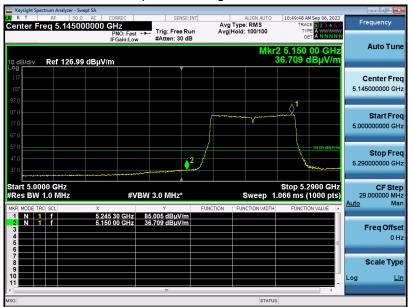
### **Result: Pass**



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11ac80_5210MHz	Antenna	Vertical



Test Graph for Average Measurement



#### Result: Pass



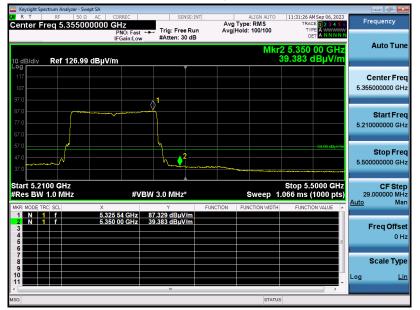
#### Report No.: AGC11034230802FR02 Page 419 of 442

EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11ax80_5210MHz	Antenna	Horizontal

#### ALIGN AUTO Avg Type: Log-Pwi Avg|Hold: 100/100 uencv enter Freg 5.355000000 GHz Trig: Free Run #Atten: 30 dB Auto Tun Mkr2 5.350 00 GH 48.630 dBuV/r Ref 126.99 dBµV/m Center Fred 5.355000000 GHz Start Fred 5.210000000 GHz ∧3 Stop Free 5.50000000 GHz Stop 5.5000 GHz Sweep 1.066 ms (1000 pts) CF Step 29.000000 MHz o Man 5.2100 GHz BW 1.0 MH; #VBW 3.0 MHz Freq Offset 0 Hz Scale Type .00 Lir

#### Test Graph for Peak Measurement

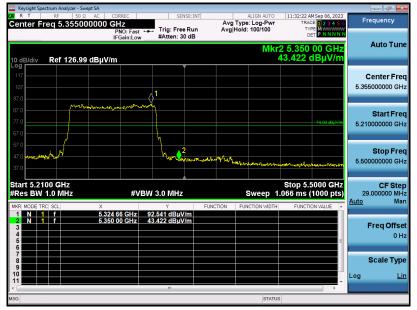
Test Graph for Average Measurement



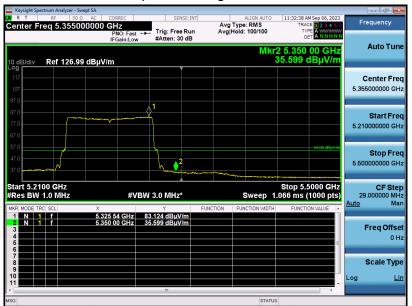
#### **Result: Pass**



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11ax80_5210MHz	Antenna	Vertical



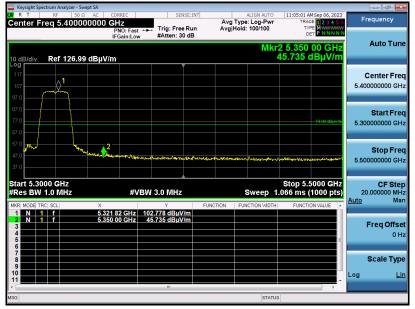
Test Graph for Average Measurement



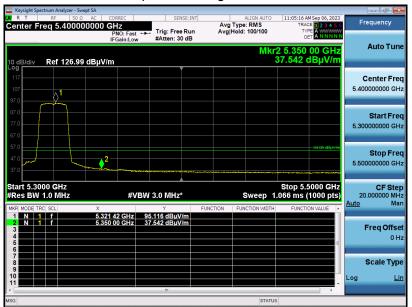
#### Result: Pass



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20_5260MHz	Antenna	Horizontal



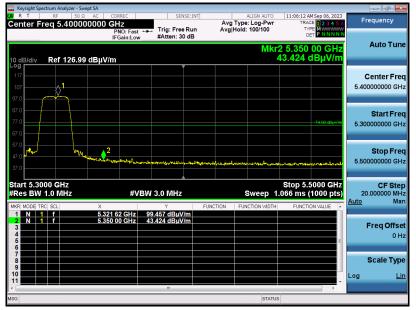
Test Graph for Average Measurement



#### Result: Pass



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20_5260MHz	Antenna	Vertical



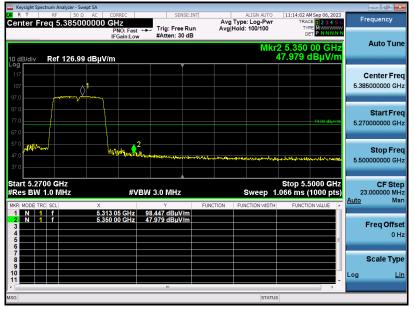
Test Graph for Average Measurement



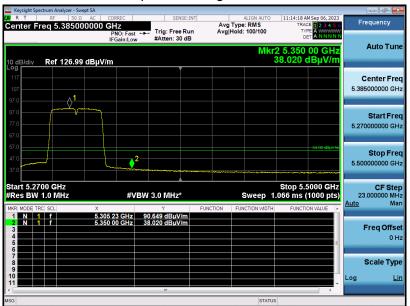
#### Result: Pass



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n40_5310MHz	Antenna	Horizontal



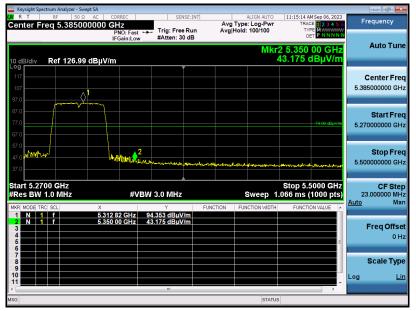
Test Graph for Average Measurement



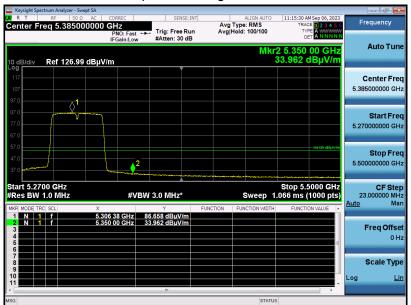
#### Result: Pass



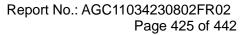
EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20_5310MHz	Antenna	Vertical



Test Graph for Average Measurement

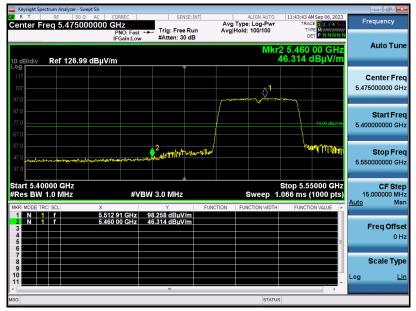


#### **Result: Pass**

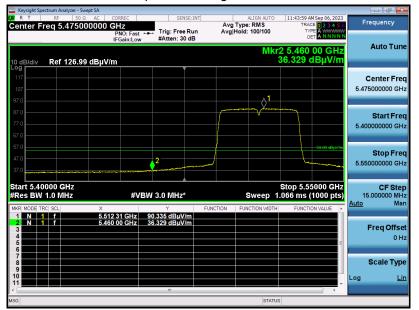




EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11ac80_5290MHz	Antenna	Horizontal



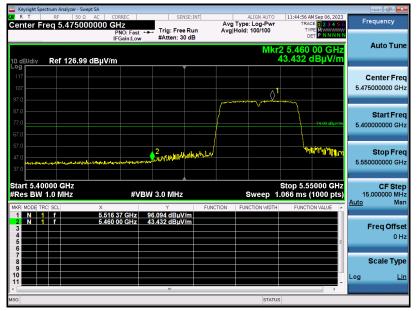
Test Graph for Average Measurement



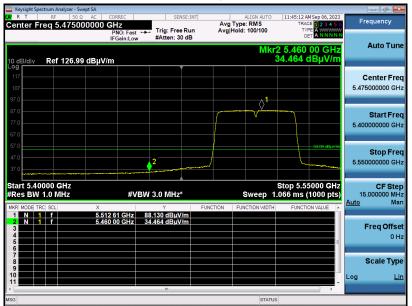
#### **Result: Pass**



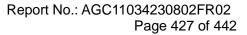
EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11ac80_5290MHz	Antenna	Vertical



Test Graph for Average Measurement



#### Result: Pass

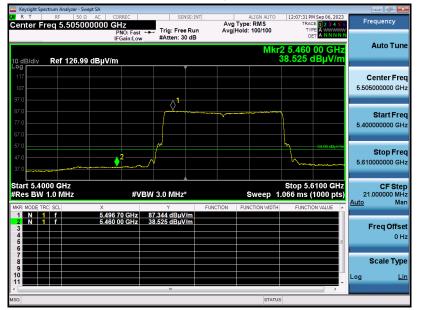




EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11ax80_5290MHz	Antenna	Horizontal



Test Graph for Average Measurement



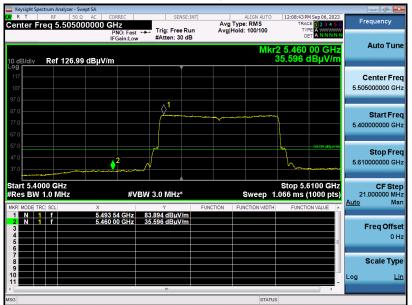
#### **Result: Pass**



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11ax80_5290MHz	Antenna	Vertical



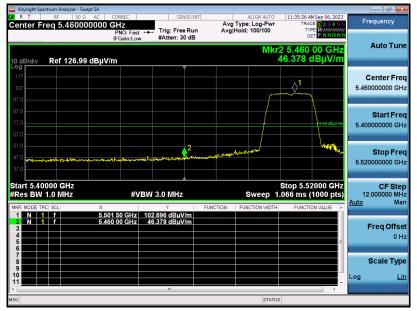
#### Test Graph for Average Measurement



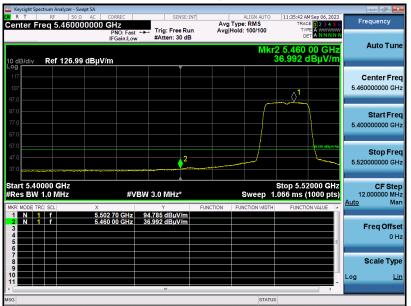
#### **Result: Pass**



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20_5500MHz	Antenna	Horizontal



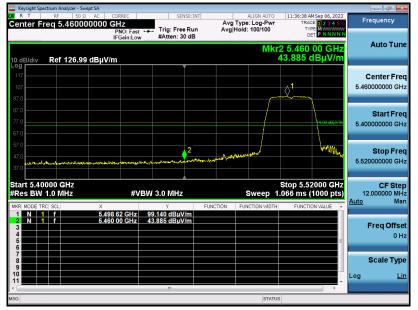
Test Graph for Average Measurement



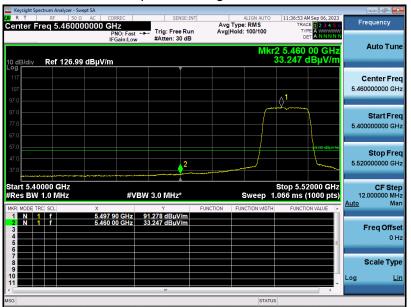
#### Result: Pass



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20_5500MHz	Antenna	Vertical



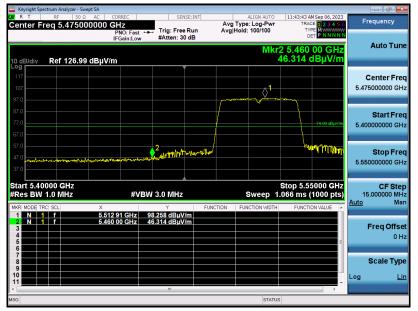
Test Graph for Average Measurement



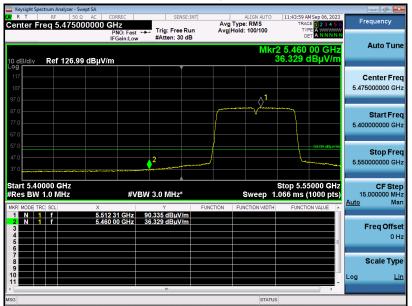
#### Result: Pass



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n40_5510MHz	Antenna	Horizontal



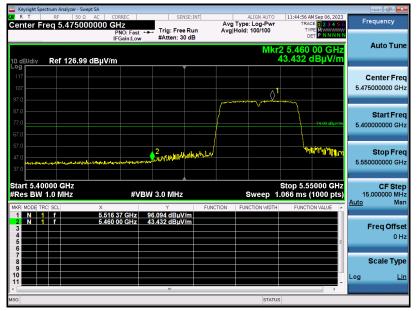
Test Graph for Average Measurement



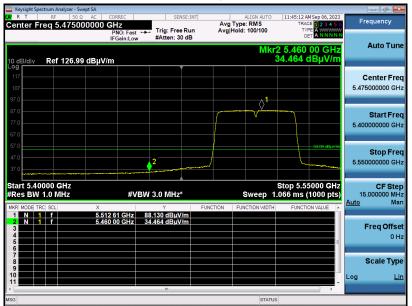
#### Result: Pass



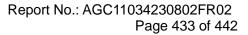
EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n40_5510MHz	Antenna	Vertical



Test Graph for Average Measurement



#### Result: Pass



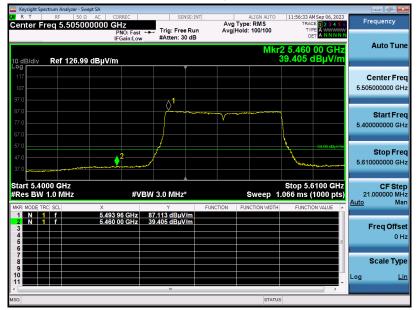


EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11ac80_5530MHz	Antenna	Horizontal

#### ALIGN AUTO Avg Type: Log-Pwi Avg|Hold: 100/100 uencv Center Freg 5.505000000 GHz Trig: Free Run #Atten: 30 dB Auto Tun Mkr2 5.460 00 GH 51.689 dBuV/r Ref 126.99 dBµV/m Center Fred 5.505000000 GHz $\Diamond^1$ Start Fred 5.40000000 GHz -wither Stop Free 5.61000000 GHz Stop 5.6100 GHz Sweep 1.066 ms (1000 pts) CF Step 21.000000 MHz o Man t 5.4000 GHz Res BW 1.0 MH; #VBW 3.0 MHz 5.499 01 GHz 5.460 00 GHz 5 441 41 GHz 95.134 c 51.689 c 54 712 c Freq Offset 0 Hz Scale Type .oa Lir

#### Test Graph for Peak Measurement

Test Graph for Average Measurement



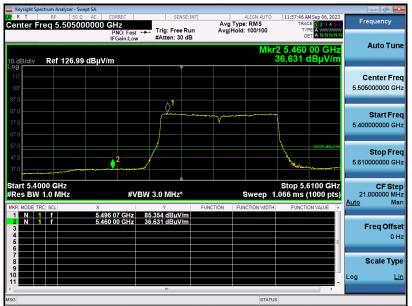
#### **Result: Pass**



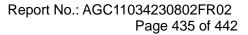
EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11ac80_5530MHz	Antenna	Vertical



Test Graph for Average Measurement

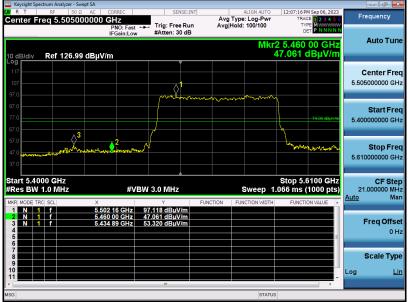


#### Result: Pass

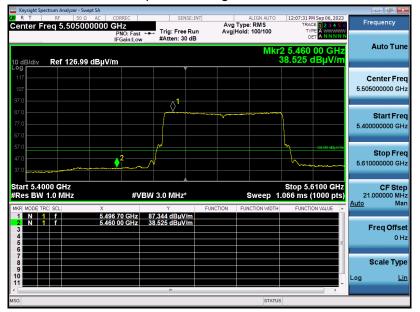




EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11ax80_5530MHz	Antenna	Horizontal



Test Graph for Average Measurement



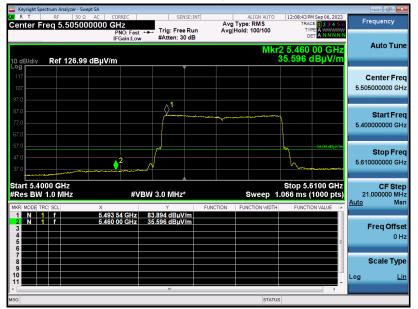
#### **Result: Pass**



EUT Name	IP Camera	Model Name	RLC-810WA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11ax80_5530MHz	Antenna	Vertical



Test Graph for Average Measurement



#### **Result: Pass**



#### Note:

- 1. The factor had been edited in the "Input Correction" of the Spectrum Analyzer.
- 2. All test modes had been pre-tested. Refer to Chapter 5 of the report for details.



# **12. AC Power Line Conducted Emission Test**

#### **12.1 Measurement limit**

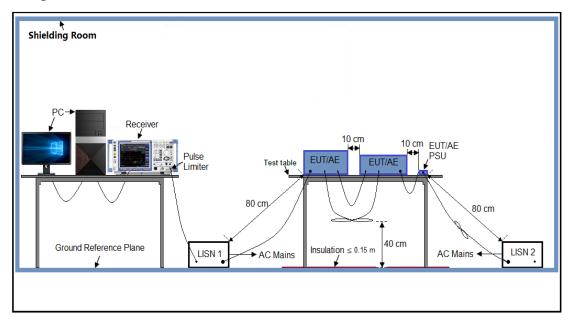
Francisco	Maximum RF Line Voltage				
Frequency	Q.P (dBµV)	Average (dBµV)			
150kHz~500kHz	66-56	56-46			
500kHz~5MHz	56	46			
5MHz~30MHz	60	50			

Note:

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

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

#### 12.2 Block Diagram of Line Conducted Emission Test





### 12.3 Preliminary Procedure of Line Conducted Emission Test

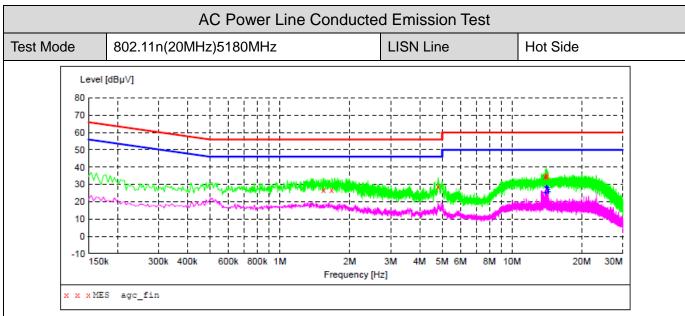
- 1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2. Support equipment, if needed, was placed as per ANSI C63.10.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4. All support equipment received AC120V/60Hz power from a LISN, if any.
- 5. The EUT received charging voltage by adapter which received 120V/60Hzpower by a LISN.
- 6. The test program was started. Emissions were measured on each current carrying line of the EUT using spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 Ohm load; the second scan had Line 1 connected to a 50 Ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.
- 9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

#### 12.4 Final Procedure of Line Conducted Emission Test

- 1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less – 2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 3. The test data of the worst case was reported on the Summary Data page.
- 4. All test modes had been pre-tested, refer to chapter 5 of the report for details.





#### 12.5 Test Result of Line Conducted Emission Test

#### MEASUREMENT RESULT: "agc\_fin"

2023/8/17	20:00					
Frequenc MB	cy Level Hz dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
1.54600	26.60	6.2	56	29.4	QP	L1
1.67400	26.80	6.2	56	29.2	QP	L1
4.81000	28.90	6.3	56	27.1	QP	L1
13.91000	34.50	6.8	60	25.5	QP	г1
14.03000	35.70	6.8	60	24.3	QP	L1
14.15400	34.60	6.8	60	25.4	QP	ь1

#### MEASUREMENT RESULT: "agc fin2"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
13.910000	25.50	6.8	50	24.5	AV	L1
14.030000	28.80	6.8	50	21.2	AV	L1
14.150000	28.20	6.8	50	21.8	AV	L1
14.214000	28.10	6.8	50	21.9	AV	L1
14.274000	27.40	6.8	50	22.6	AV	L1
14.334000	25.70	6.8	50	24.3	AV	L1

#### **Result: Pass**

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

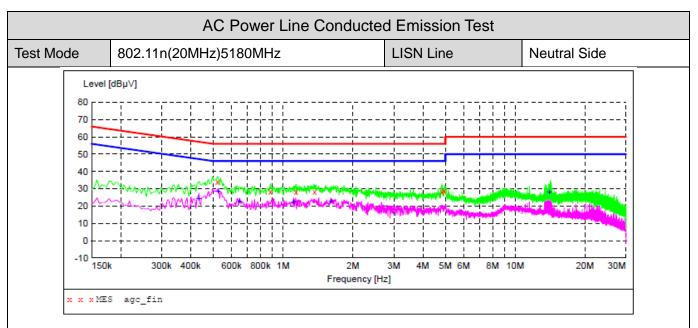
 Attestation of Global Compliance(Shenzhen)Co., Ltd

 Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd

 Tel: +86-755 2523 4088
 E-mail: agc@agccert.com

 Web: http://www.agccert.com/





#### MEASUREMENT RESULT: "agc\_fin"

2023/8/17	20:03					
-	cy Level Hz dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.5220	00 33.80	6.2	56	22.2	QP	N
0.8820	00 28.10	6.2	56	27.9	QP	N
1.1380	00 28.10	6.2	56	27.9	QP	N
1.3700	00 28.10	6.2	56	27.9	QP	N
4.8340	00 28.40	6.3	56	27.6	QP	N
4.9540	00 28.70	6.3	56	27.3	QP	Ν

#### MEASUREMENT RESULT: "agc fin2"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.434000	24.40	6.1	47	22.8	AV	N
0.526000	28.70	6.2	46	17.3	AV	Ν
0.650000	23.20	6.2	46	22.8	AV	Ν
1.110000	22.40	6.2	46	23.6	AV	Ν
1.606000	22.90	6.2	46	23.1	AV	Ν
14.030000	28.50	6.8	50	21.5	AV	Ν

#### **Result: Pass**



Report No.: AGC11034230802FR02 Page 442 of 442

# Appendix I: Photographs of Test Setup

Refer to the Report No.: AGC11034230802AP02

# Appendix II: Photographs of EUT

Refer to the Report No.: AGC11034230802AP03

### ----End of Report----



## Conditions of Issuance of Test Reports

1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").

2. Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.

3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.

4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.

5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.

6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.

7.Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.

8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.

9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.