

Report No.: TW2407135-01E

Applicant: MG Accessories & Distribution Inc.

Product: Action Camera

Model No.: ARG-AC-9190, ARG-AC-9190BK, ARG-AC-9191,

ARG-AC-9192, ARG-AC-9193, ARG-AC-9194, ARG-AC-9195, ARG-AC-9196, ARG-AC-9197,

ARG-AC-9198, ARG-AC-9199

Trademark: ArgomTech

Test Standards: FCC Part 15.247

Test result:

It is herewith confirmed and found to comply with the

requirements set up by ANSI C63.10, FCC Part 15.247 for

the evaluation of electromagnetic compatibility

Approved By

Terry long

**Terry Tang** 

Manager

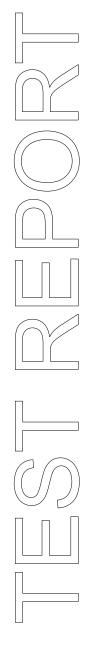
Dated: August 20, 2024

Results appearing herein relate only to the sample tested The technical reports is issued errors and omissions exempt and is subject to withdrawal at

# SHENZHEN TIMEWAY TESTING LABORATORIES

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com



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# **Special Statement:**

## FCC-Registration No.: 744189

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 744189.

# Industry Canada (IC) — Registration No.:5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

# A2LA (Certification Number:5013.01)

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

CAB identifier: CN0033

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# **Test Report Conclusion**

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### 1.0 General Details

### 1.1 Test Lab Details

Name: SHENZHEN TIMEWAY TESTING LABORATORIES.

Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le

Village, Nanshan District, Shenzhen, China

Telephone: (755) 83448688 Fax: (755) 83442996

Site Listed with Federal Communications commission (FCC)

Registration Number:744189 For 3m Anechoic Chamber

Site Listed with Industry Canada of Ottawa, Canada

Registration Number: IC: 5205A

For 3m Anechoic Chamber

### 1.2 Applicant Details

Applicant: MG Accessories & Distribution Inc.

Address: 12650 NW 25th Street Suite 112, Miami, Florida, United States 33182

### 1.3 Description of EUT

Product: Action Camera

Manufacturer: MG Accessories & Distribution Inc.

Address: 12650 NW 25th Street Suite 112, Miami, Florida, United States 33182

Trademark: ArgomTech
Model Number: ARG-AC-9190

Additional Model Number: ARG-AC-9190BK, ARG-AC-9191, ARG-AC-9192, ARG-AC-9193,

ARG-AC-9194, ARG-AC-9195, ARG-AC-9196, ARG-AC-9197,

ARG-AC-9198, ARG-AC-9199

Hardware Version: B10 V1.1

Software Version: V3.1

Serial No.: SPAC9190BK2407

Rating: DC5V, 1A

Battery: DC3.7V, 1050mAh Li-ion battery

Type of Modulation IEEE 802.11b: DSSS (CCK, QPSK, DBPSK)

IEEE 802.11g/n (HT20): OFDM (64QAM, 16QAM, QPSK, BPSK)

Frequency range IEEE 802.11b/g/n (HT20): 2412-2462MHz

Channel Spacing 5MHz for IEEE 802.11b/g/n (HT20) Air Data Rate IEEE 802.11b: 11, 5.5, 2, 1 Mbps

IEEE 802.11g: 54, 48,36, 24, 18, 12, 9, 6 Mbps

IEEE 802.11n HT20: 6.5, 13,19.5, 26, 39, 52, 58.5, 65 Mbps

The report refers only to the sample tested and does not apply to the bulk.

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Frequency Selection By software

Channel Number IEEE 802.11b/g/n (HT20): 11 Channels

Antenna: FPC antenna with gain 1.65dBi Max (Get from the antenna specification)

1.4 Submitted Sample: 2 Samples

1.5 Test Duration

2024-07-22 to 2024-08-20

1.6 Test Uncertainty

Conducted Emissions Uncertainty = 3.6dB

Radiated Emissions below 1GHz Uncertainty =4.7dB

Radiated Emissions above 1GHz Uncertainty =6.0dB

Conducted Power Uncertainty =6.0dB

Occupied Channel Bandwidth Uncertainty = 5%

Note: The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

1.7 Test Engineer

The sample tested by

Print Name: Andy Xing

Andy -xing

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2.0 Test Equipment							
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date		
ESPI Test Receiver	R&S	ESPI 3	100379	2024-07-12	2025-07-11		
LISN	R&S	EZH3-Z5	100294	2024-07-12	2025-07-11		
LISN	R&S	EZH3-Z5	100253	2024-07-12	2025-07-11		
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2024-07-12	2025-07-11		
Loop Antenna	EMCO	6507	00078608	2022-07-18	2025-07-17		
Spectrum	R&S	FSIQ26	100292	2024-07-12	2025-07-11		
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2022-07-18	2025-07-17		
Horn Antenna	R&S	BBHA 9120D	9120D-631	2022-07-18	2025-07-17		
Power meter	Anritsu	ML2487A	6K00003613	2024-07-12	2025-07-11		
Power sensor	Anritsu	MA2491A	32263	2024-07-12	2025-07-11		
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2022-07-18	2025-07-17		
9*6*6 Anechoic			N/A	2022-07-26	2025-07-25		
EMI Test Receiver	RS	ESVB	826156/011	2024-07-12	2025-07-11		
EMI Test Receiver	RS	ESCS 30	834115/006	2024-07-12	2025-07-11		
Spectrum	HP/Agilent	E4407B	MY50441392	2024-07-12	2025-07-11		
Spectrum	RS	FSP	1164.4391.38	2024-07-12	2025-07-11		
RF Cable	Zhengdi	ZT26-NJ-NJ-8M/FA		2024-07-12	2025-07-11		
RF Cable	Zhengdi	7m	1	2024-07-12	2025-07-11		
Pre-Amplifier	Schwarebeck	BBV9743	#218	2024-07-12	2025-07-11		
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2024-07-12	2025-07-11		
LISN	SCHAFFNER	NNB42	00012	2024-07-12	2025-07-11		
ESPI Test Receiver	R&S	ESPI 3	100379	2024-07-12	2025-07-11		
LISN	R&S	EZH3-Z5	100294	2024-07-12	2025-07-11		

## 2.2 Automation Test Software

### For Conducted Emission Test

Name	Version
EZ-EMC	Ver.EMC-CON 3A1.1

## For Radiated Emissions

Name	Version
EMI Test Software BL410-EV18.91	V18.905
EMI Test Software BL410-EV18.806 High Frequency	V18.06

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### 3. DESCRIPTION OF TEST MODES

### IEEE 802.11b, 802.11g, 802.11n (HT20) mode

The EUT had been tested under operating condition. There are three channels have been tested as following:

Channel	Frequency (MHz)
Low	2412
Middle	2437
High	2462

IEEE 802.11b mode: 1Mbps data rate (worst case) was chosen for full testing. IEEE 802.11g mode: 6Mbps data rate (worst case) was chosen for full testing. IEEE 802.11n (HT20) mode: 6.5Mbps (worst case) were chosen for full testing;

Note: During the test, the duty cycle was set up to >98%

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#### 3.0 **Technical Details**

### 3.1 **Summary of test results**

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph15.203	Antenna Requirement	Pass	Complies
FCC Part 15, Paragraph15.207	<b>Conducted Emission Test</b>	Pass	Complies
	Spectrum bandwidth of a	Pass	Complies
FCC Part 15 Subpart C	Orthogonal Frequency		
Paragraph 15.247(a)(2) Limit	<b>Division Multiplex System</b>		
1 aragraph 13.247(a)(2) Limit	Limit: 6dB		
	bandwidth>500kHz		
FCC Part 15, Paragraph	Maximum peak output	Pass	
15.247(b)	power		Complies
13.247(0)	Limit: max. 30dBm		
FCC Part 15, Paragraph	Transmitter Radiated	Pass	Complies
15.109,15.205 & 15.209	Emission		
	Limit: Table 15.209		
FCC Part 15, Paragraph	<b>Power Spectral Density</b>	Pass	Complies
15.247(e)	Limit: max. 8dBm/3kHz		
FCC Part 15, Paragraph	Out of Band Emission and	Pass	Complies
15.247(d)	<b>Restricted Band</b>		
	Radiation		
	Limit: 20dB less than		
	peak value of fundamental		
	frequency		
	Restricted band limit:		
	<b>Table 15.209</b>		

### 3.2 **Test Standards**

FCC Part 15 Subpart & Subpart C, Paragraph 15.247

### 4.0 **EUT Modification**

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES.

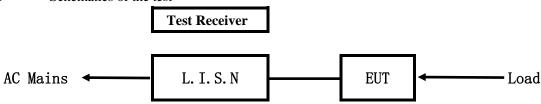
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### **5.0** Power Line Conducted Emission Test

### 5.1 Schematics of the test

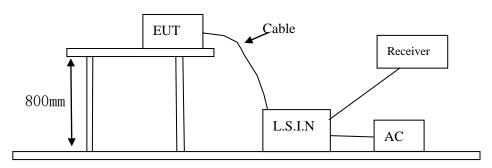


**EUT: Equipment Under Test** 

### 5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013. The Frequency spectrum from 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10-2013.

Test Voltage: 120V~, 60Hz Block diagram of Test setup



### 5.3 Configuration of the EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

### A. EUT

Device	Manufacturer	Model	FCC ID
		ARG-AC-9190, ARG-AC-9190BK,	
		ARG-AC-9191, ARG-AC-9192,	
Action Camera	MG Accessories &	ARG-AC-9193, ARG-AC-9194,	2AUGWARG-AC-91
Action Camera	Distribution Inc.	ARG-AC-9195, ARG-AC-9196,	90
		ARG-AC-9197, ARG-AC-9198,	
		ARG-AC-9199	

## B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

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### C. Peripherals

Device	evice Manufacturer Model		Rating
Power KEYU KA23-0502000DE		KA23-0502000DEU	Input: 100-240V~, 50/60Hz, 0.35A;
Supply			Output: DC5V, 2A

## 5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2013.

- A Setup the EUT and simulators as shown on follow
- B Enable AF signal and confirm EUT active to normal condition

## 5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency	Limits (dB $\mu$ V)				
(MHz)	Quasi-peak Level	Average Level			
0.15 ~ 0.50	66.0~56.0*	56.0~46.0*			
$0.50 \sim 5.00$	56.0	46.0			
5.00 ~ 30.00	60.0	50.0			

Notes:

- 1. \*Decreasing linearly with logarithm of frequency.
- 2. The tighter limit shall apply at the transition frequencies

### 5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

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### A: Conducted Emission on Live Terminal (150kHz to 30MHz)

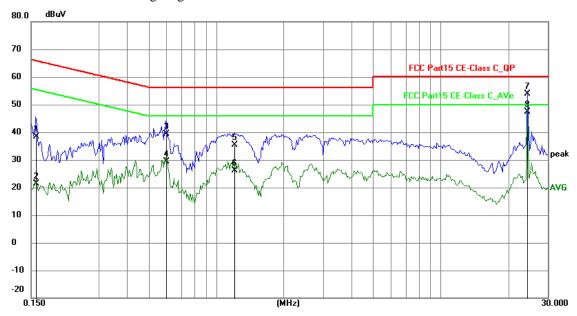
## **EUT Operating Environment**

Humidity: 65%RH Atmospheric Pressure: 101 kPa Temperature: 26°C

**EUT set Condition: Keep WIFI Transmitting** 

**Results: Pass** 

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1578	28.69	9.78	38.47	65.58	-27.11	QP	Р
2	0.1578	11.70	9.78	21.48	55.58	-34.10	AVG	Р
3	0.5985	29.66	9.77	39.43	56.00	-16.57	QP Q	Р
4	0.5985	19.56	9.77	29.33	46.00	-16.67	AVG	Р
5	1.2069	25.61	9.79	35.40	56.00	-20.60	Q Q	Р
6	1.2069	16.36	9.79	26.15	46.00	-19.85	AVG	Р
7	24.3642	43.05	10.95	54.00	60.00	-6.00	QP Q	Р
8	24.3642	36.45	10.95	47.40	50.00	-2.60	AVG	Р

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### B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

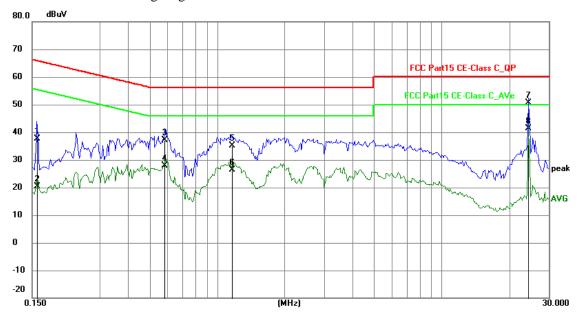
## **EUT Operating Environment**

Humidity: 65%RH Atmospheric Pressure: 101 kPa Temperature: 26°C

**EUT set Condition: Keep WIFI Transmitting** 

**Results: Pass** 

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1578	27.92	9.78	37.70	65.58	-27.88	QP	Р
2	0.1578	10.58	9.78	20.36	55.58	-35.22	AVG	Р
3	0.5829	27.28	9.77	37.05	56.00	-18.95	QP	Р
4	0.5829	18.18	9.77	27.95	46.00	-18.05	AVG	Р
5	1.1601	25.28	9.79	35.07	56.00	-20.93	QP	Р
6	1.1601	16.71	9.79	26.50	46.00	-19.50	AVG	Р
7	24.3642	39.79	10.95	50.74	60.00	-9.26	QP	Р
8	24.3642	30.49	10.95	41.44	50.00	-8.56	AVG	Р

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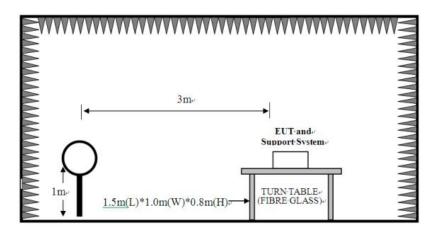


### 6 Radiated Emission Test

- 6.1 Test Method and test Procedure:
- (1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.
- (3) The frequency spectrum from 9kHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are Quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=1MHz VBW=3MHz and PK detector. AV value with RBW=1MHz, VBW=3MHz and RMS detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the data table.
- (6) The antenna polarization: Vertical polarization and Horizontal polarization.

### **Block diagram of Test setup**

For radiated emissions from 9kHz to 30MHz



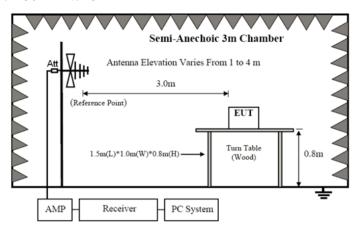
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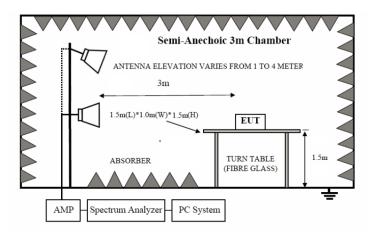
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For radiated emissions from 30MHz to1GHz



For radiated emissions above 1GHz



# 6.2 Configuration of The EUT Same as section 5.3 of this report

# 6.3 EUT Operating Condition Same as section 5.4 of this report.

# 6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

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### Frequencies in restricted band are complied to limit on Paragraph 15.209

Frequency Range (MHz)	Distance (m)	Field strength (dB µ V/m)
0.009-0.049	3	20log(2400/F(kHz)) +40log (300/3)
0.490-1.705	3	20log(24000/F(kHz)) +40log (30/3)
1.705-30	3	69.5
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note:

- 1. RF Voltage  $(dBuV) = 20 \log RF \text{ Voltage } (uV)$
- 2. In the Above Table, the tighter limit applies at the band edges.
- 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
- 4. All scanning using PK detector. And the final emission level was get using QP detector for frequency range from 30-1000MHz.As to 1G-25G, the final emission level got using PK. For fundamental measurement, PK detector used.
- 5. For radiated emissions from 9kHz to 30MHz, the emission level is much less than the limit for more than 20dB. No necessary to take down the record.
- 6. Worse case were recorded in the test report. 802.11g was the worst case.
- 7. Battery fully charged was used during the test
- 8. This is a handhold device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.

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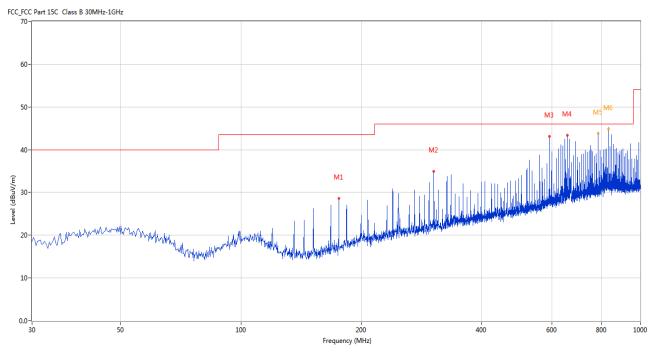


# Test result General Radiated Emission Data and Harmonics Radiated Emission Data

### Radiated Emission In Horizontal (30MHz----1000MHz)

**EUT set Condition: Keep Transmitting** 

**Results: Pass** 



No.	Frequency	Results	Factor	Limit	Margin	Detector	Table	Height	Antenna	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(Degree)	(cm)		
1	175.949	28.58	-15.62	43.5	14.92	Peak	0.00	100	Horizontal	Pass
2	303.957	34.94	-10.99	46.0	11.06	Peak	31.00	100	Horizontal	Pass
3	591.975	45.09	-5.16	46.0	0.91	Peak	0.00	100	Horizontal	Pass
4	655.979	45.42	-4.51	46.0	0.58	Peak	30.00	100	Horizontal	Pass
5	783.987	44.21	-3.08	46.0	1.79	Peak	0.00	100	Horizontal	Pass
5*	783.987	43.80	-3.08	46.0	2.20	QP	0.00	100	Horizontal	Pass
6	831.990	45.17	-2.91	46.0	0.83	Peak	0.00	100	Horizontal	Pass
6*	831.990	44.82	-2.91	46.0	1.18	QP	0.00	100	Horizontal	Pass

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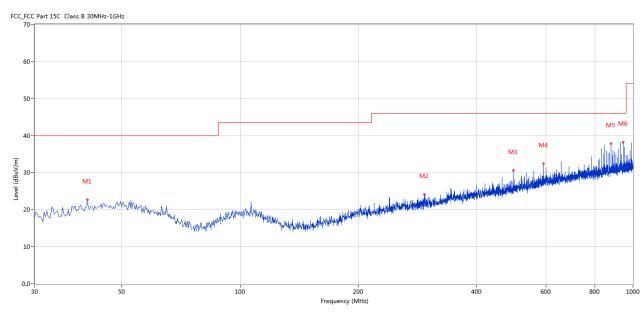


# Test result General Radiated Emission Data and Harmonics Radiated Emission Data

### Radiated Emission In Vertical (30MHz----1000MHz)

**EUT set Condition: Keep Transmitting** 

**Results: Pass** 



No.	Frequency	Results	Factor	Limit	Margin	Detector	Table	Height	Antenna	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(Degree)	(cm)		
1	40.910	22.62	-12.11	40.0	17.38	Peak	73.00	100	Vertical	Pass
2	294.744	24.08	-11.18	47.0	22.92	Peak	96.00	100	Vertical	Pass
3	495.969	30.59	-7.13	47.0	16.41	Peak	165.00	100	Vertical	Pass
4	591.975	32.42	-5.16	47.0	14.58	Peak	163.00	100	Vertical	Pass
5	879.993	37.82	-1.97	47.0	9.18	Peak	160.00	100	Vertical	Pass
6	943.997	38.25	-1.62	47.0	8.75	Peak	2.00	100	Vertical	Pass

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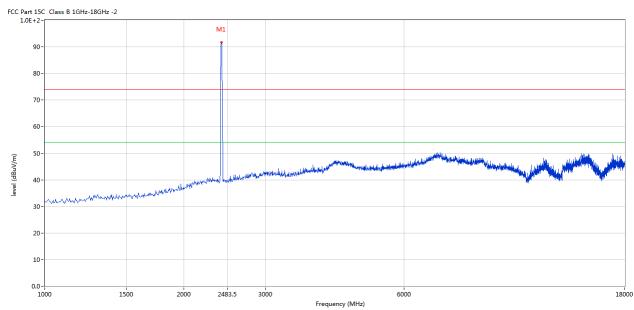
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Please refer to the following test plots for details:

# CH01 for 11g at 6Mbps: Horizontal



No.	Frequency	Results	Factor	Limit	Over	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)		(o)	(cm)		
1	2412	91.65	-3.57	74.0	17.65	Peak	268.00	100	Horizontal	N/A

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0.0-

1500

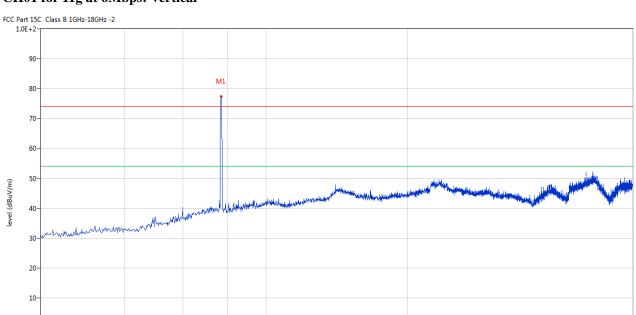
2000

2483.5

3000



## CH01 for 11g at 6Mbps: Vertical



No.	Frequency	Results	Factor	Limit	Over	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)		(o)	(cm)		
1	2412	77.45	-3.57	74.0	3.45	Peak	179.00	100	Vertical	N/A

Frequency (MHz)

6000

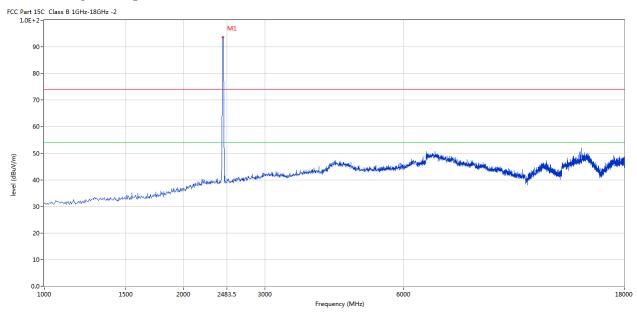
18000

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## CH06 for 11g at 6Mbps: Horizontal



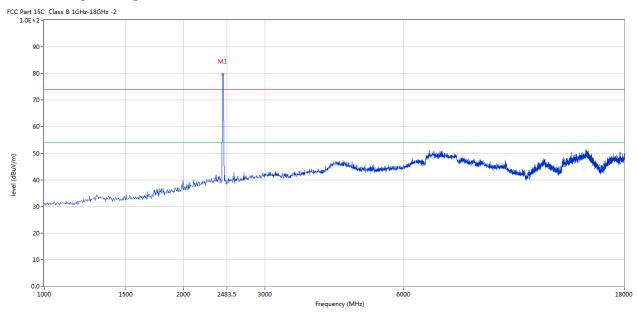
No.	Frequency	Results	Factor	Limit	Over	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)		(o)	(cm)		
1	2437	93.61	-3.57	74.0	19.61	Peak	272.00	100	Horizontal	N/A

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## CH06 for 11g at 6Mbps: Vertical



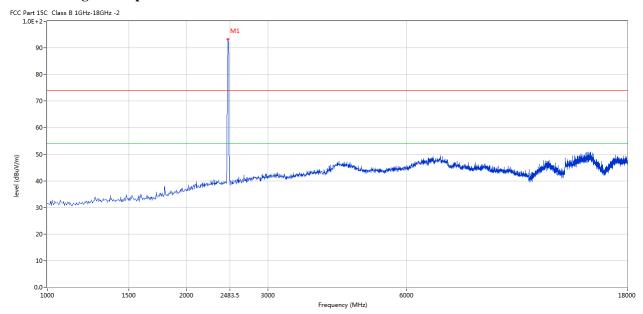
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2437	79.57	-3.57	74.0	5.57	Peak	32.00	100	Vertical	N/A

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# CH11 for 11g at 6Mbps: Horizontal



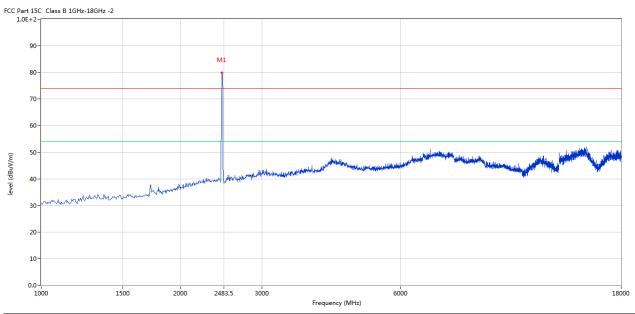
No.	Frequency	Results	Factor	Limit	Over	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)		(o)	(cm)		
1	2462	93.13	-3.57	74.0	19.13	Peak	271.00	100	Horizontal	N/A

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### CH11 for 11g at 6Mbps: Vertical



No.	Frequency	Results	Factor	Limit	Over	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)		(o)	(cm)		
1	2462	79.83	-3.57	74.0	5.83	Peak	232.00	100	Vertical	N/A

Note: 1. Result Level = Reading + Factor

- 2. Factor= AF + Cable Loss- Preamp
- 3. Margin = Result– Limit
- 4. For radiated Emissions from 18-25GHz and below 30MHz, it is only the floor noise and less than the limit for more than 20dB. No necessary to take down.
- 5. Note: the final peak measurement results less than the AV limit. No necessary to take down the final AV measurement result

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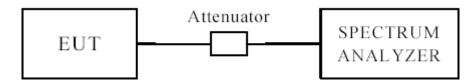
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# 7.0 6dB Bandwidth Measurement

# 7.1 Test Setup



### 7.2 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is >500 kHz

### 7.3 Test Procedure

- 1. Set resolution bandwidth (RBW) = 100 kHz
- 2. Set the video bandwidth  $(VBW) \ge 3 \times RBW$ .
- 3. Detector = Peak.
- 4. Trace mode = max hold.
- 5. Sweep = auto couple.
- 6. Allow the trace to stabilize.
- 7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

### 7.4 Test Result

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# 6dB Occupied Bandwidth

EUT			Action Car	nera	Model	ARC	G-AC-9190
Mode			802.111	)	Test Voltage	Ι	DC3.7V
Temperat	ure		C,	Humidity	5	6% RH	
Channel		el Frequency (MHz)	Data Transfer Rate (Mbps)	6 dB Bandwidth (MHz)	Minimum (MHz		Pass/ Fail
1		2412	1	10.16	0.5		Pass
6		2437 1		10.16	0.5		Pass
11		2462	1	10.16	0.5		Pass
1		2412	11	11.00	0.5		Pass
6		2437	11	11.00	0.5		Pass
11	2462		11	11.00	0.5		Pass

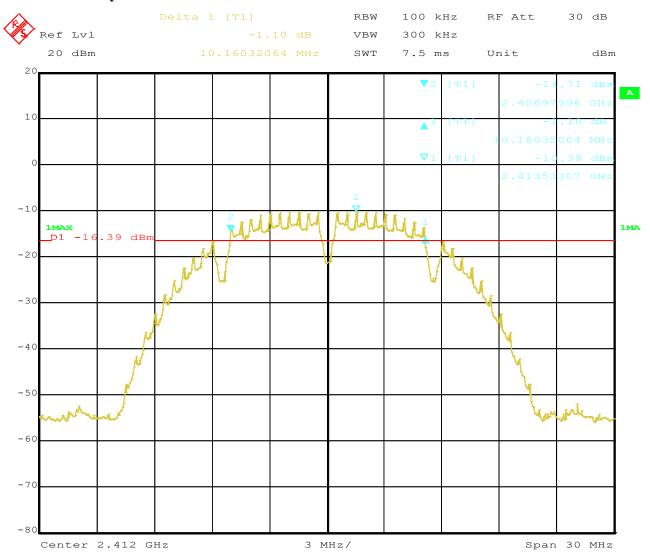
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## 1. 802.11b at 1Mbps of CH01



15.AUG.2024 11:09:31 Date:

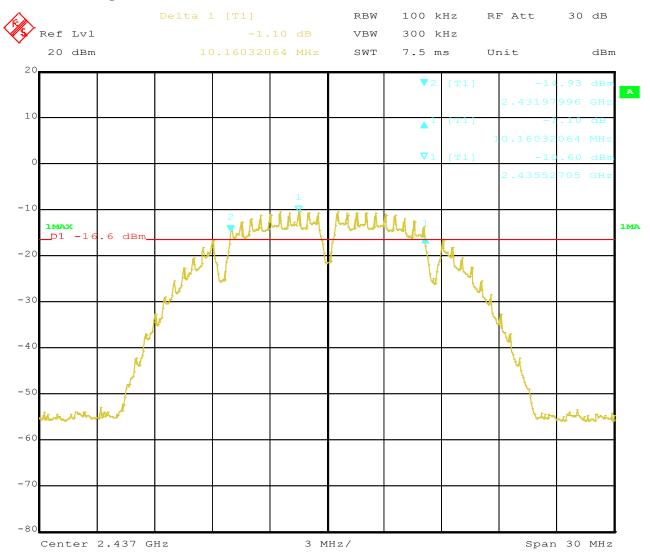
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## 2. 802.11b at 1Mbps of CH06



15.AUG.2024 11:19:03 Date:

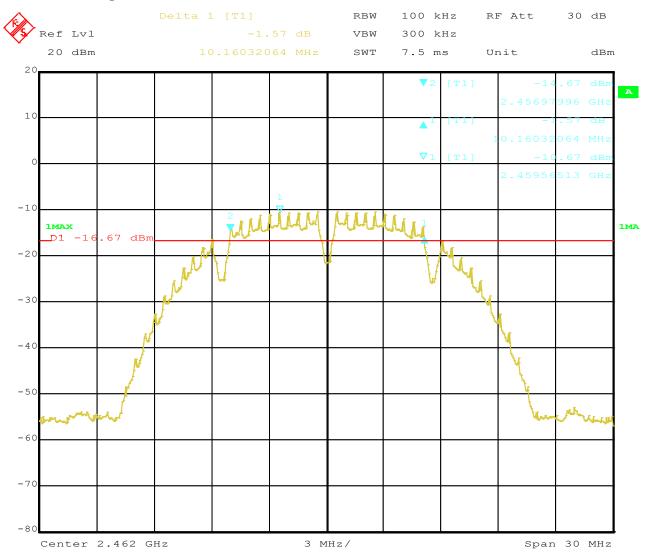
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## 3. 802.11b at 1Mbps of CH11



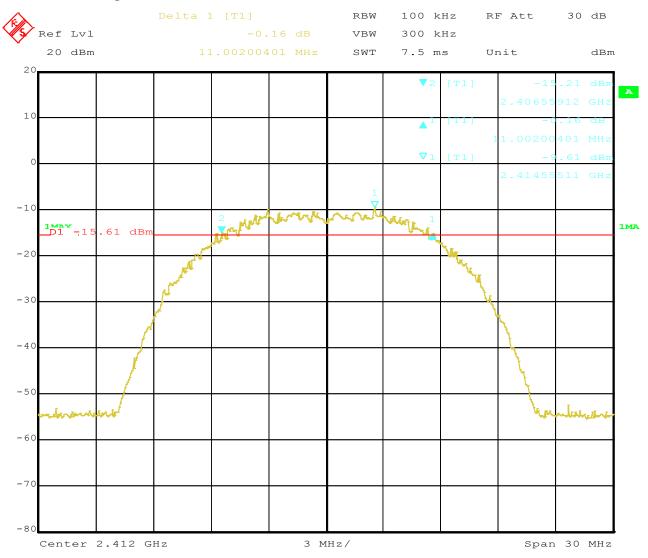
15.AUG.2024 11:14:58 Date:

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## 4. 802.11b at 11Mbps of CH01



15.AUG.2024 11:40:45 Date:

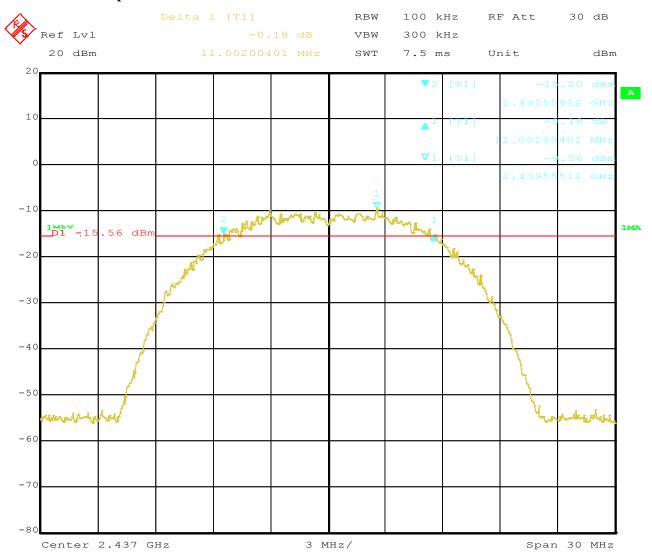
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## 5. 802.11b at 11Mbps of CH06



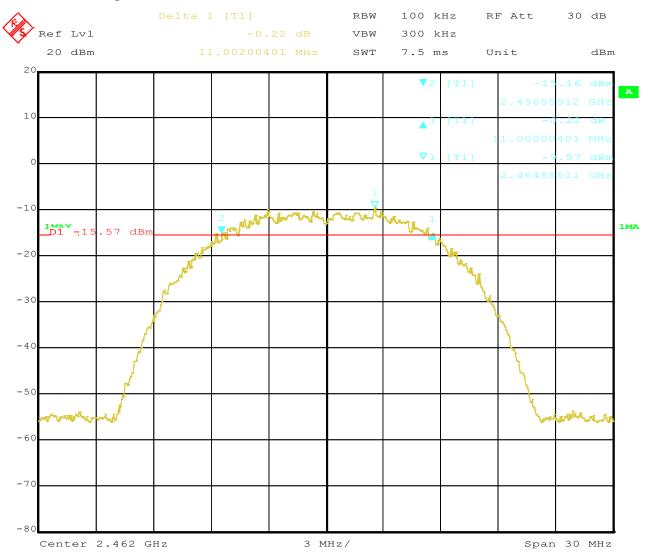
15.AUG.2024 11:51:20 Date:

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## 6. 802.11b at 11Mbps of CH11



15.AUG.2024 11:54:57 Date:

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## 6dB Occupied Bandwidth

EUT			Action Ca	mera	Model	ARG-AC-9190
Mode			802.11	g	Test Voltage	DC3.7V
Temperature			24 deg.	C,	Humidity	56% RH
Channel	Channel Frequency (MHz)		Data Transfer Rate (Mbps)	6 dB Bandwidth (MHz)	Minimum Lim (MHz)	it Pass/ Fail
1		2412		16.29	0.5	Pass
6	2437		6	16.29	0.5	Pass
11	2462		6	16.29	0.5	Pass

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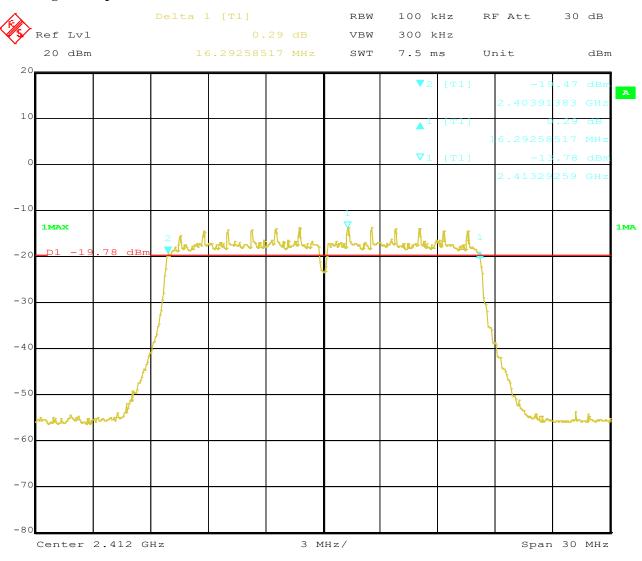
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### **Test Plots:**

## 1. 802.11g at 6Mbps of CH01



Date: 20.AUG.2024 13:58:15

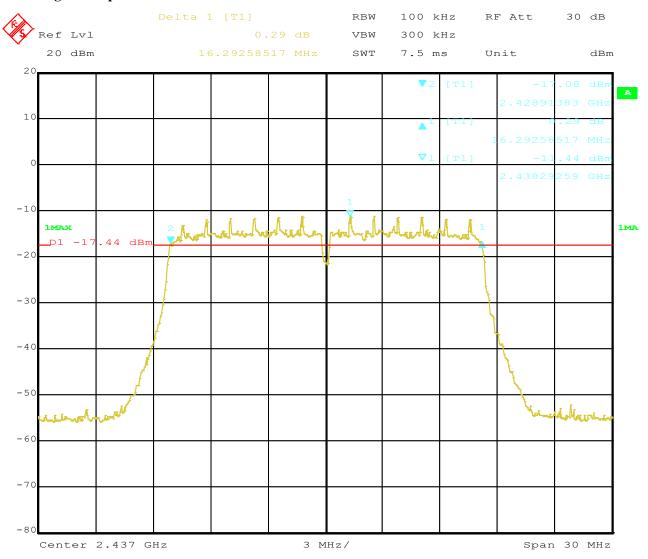
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## 2. 802.11g at 6Mbps of CH06



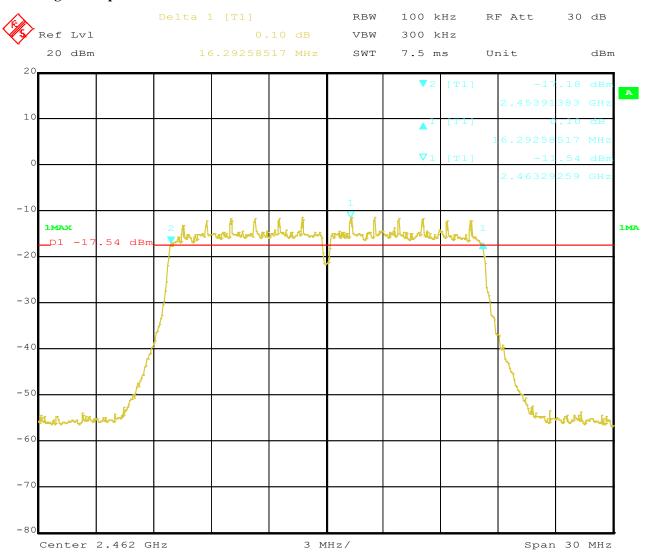
20.AUG.2024 14:03:39 Date:

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## 3. 802.11g at 6Mbps of CH11



20.AUG.2024 14:05:23 Date:

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## 6dB Occupied Bandwidth

EUT			Action Car	nera	Model	AR	G-AC-9190
Mode			802.11n H	T20	Test Voltage	]	DC3.7V
Temperature		24 deg. C,			Humidity	56% RH	
Channel	Channel Frequency (MHz)		Data Transfer Rate (Mbps)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)		Pass/ Fail
1		2412	6.5	17.25	0.5		Pass
6		2437	6.5	17.25	0.5		Pass
11	2462		6.5	17.25	0.5		Pass

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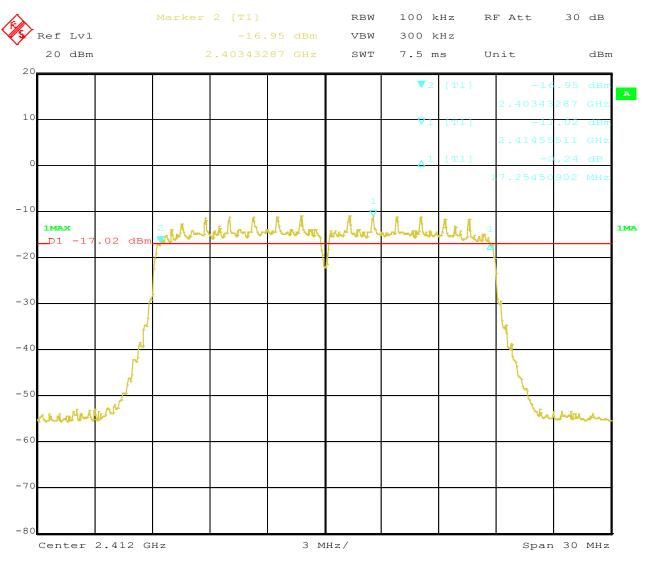
Report No.: TW2407135-01E

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## **Test Plots:**

# 1. 802.11n at HT20 of CH01

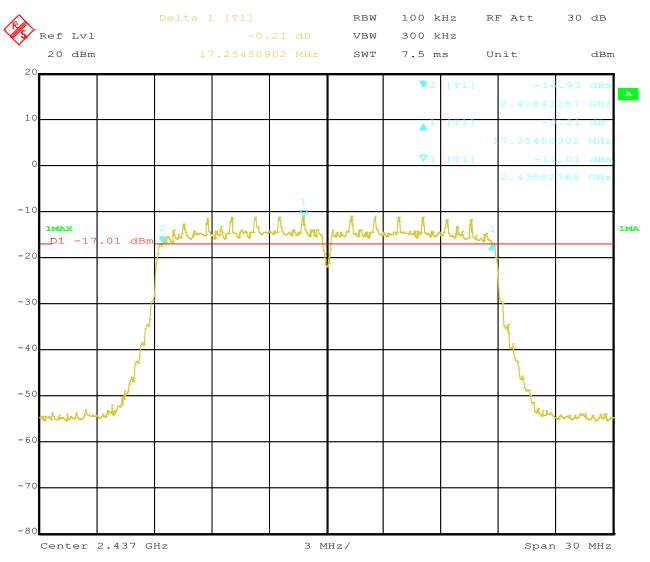


Date: 15.AUG.2024 10:49:17 Report No.: TW2407135-01E Page 38 of 83

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## 2. 802.11n at HT20 of CH06



15.AUG.2024 10:56:41 Date:

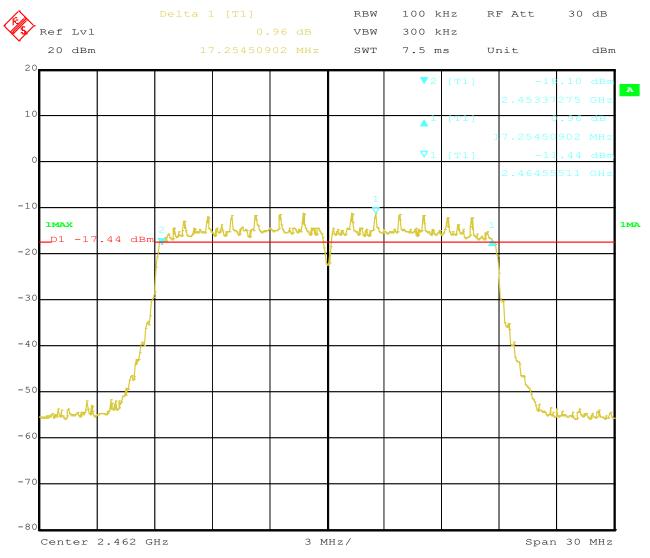
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## 3. 802.11n at HT20 of CH11



15.AUG.2024 11:00:52 Date:

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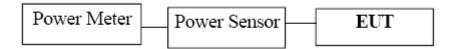
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# 8. Maximum Output Power

# 8.1 Test Setup



## 8.2 Limits of Maximum Output Power

The Maximum Output Power Measurement is 30dBm.

## **8.3 Test Procedure**

The RF power output was measured with a Power meter connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate centre frequency.

Note: The AV power was measured

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## **8.4Test Results**

EUT			Action Camera	Model	AR	G-AC-9190
Mode			802.11b	Test Voltage		DC3.7V
Temperat	ure		24 deg. C,	Humidity		56% RH
Channel	Frequ (MH	uency z)	AV Power (dBm)	Power Lin (dBm)	nit	Pass/ Fail
1	2412		1.90	30		Pass
6	2437		1.78	30		Pass
11	2462		1.75	30	30	

Note: 1. At finial test to get the worst-case emission at 1Mbps for CH01, CH06 and CH11

2. The result basic equation calculation as follow:

Power Output = Power Reading + Cable loss + Attenuator

3. The worse case was recorded

EUT		Action Camera		Model	ARG-AC-9190
Mode			802.11g	Test Voltage	DC3.7V
Temperat	ure		24 deg. C,	Humidity	56% RH
Channel	Frequ (MH:	uency z)	AV Power (dBm)	Power Limit (dBm)	Pass/ Fail
1	1 2412		1.34	30	Pass
6	2437		1.26	30	Pass
11	2462		0.94	30	Pass

Note: 1. At finial test to get the worst-case emission at 6Mbps for CH01, CH06 and CH11

2. The result basic equation calculation as follow:

Power Output = Power Reading + Cable loss + Attenuator

3. The worse case was recorded

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EUT			Action Camera	Model		ARG-AC-9190	
Mode	i		802.11n (HT20)		Voltage		DC3.7V
Temperat	ure		24 deg. C,	Hur	nidity	idity 56% RH	
Channel	Frequence (MH	uency z)	AV Power (dBm)		Power Lir (dBm)	nit	Pass/ Fail
1	2412	,	1.09		30		Pass
6	2437		1.02		30		Pass
11	2462		0.61		30		Pass

Note: 1. At finial test to get the worst-case emission at mcs0 of 11n HT20 for CH01, CH06 and CH11

2. The result basic equation calculation as follow: Power Output = Power Reading + Cable loss + Attenuator

3. The worse case was recorded

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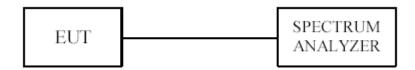
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# 9. Power Spectral Density Measurement

# 9.1 Test Setup



## 9.2 Limits of Power Spectral Density Measurement

The Maximum Power Spectral Density Measurement is 8dBm/3kHz.

## 9.3 Test Procedure

- 1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
- 2. Set the RBW = 10 kHz.
- 3. Set the VBW  $\geq$  30 kHz.
- 4. Set the span to 1.5 times the DTS channel bandwidth.
- 5. Detector = peak.
- 6. Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the maximum amplitude level.
- 10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
- 11. The resulting peak PSD level must be  $\leq 8 \text{ dBm/3kHz}$ .

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## 9.4Test Result

EUT		Action Camera		Model	ARG-AC-9190	
Mode	Mode		802.11b 11Mbps Test Voltage		DC:	3.7V
Temperat	ure		24 deg. C,	Humidity	56% RH	
Channel	Freq	uency	Power Spectral Density (dBm/10kHz)		Limit	Pass/ Fail
	(M	(Hz)			(dBm/3kHz)	
1	24	112	-19.04		8	Pass
6	24	37 -19.12			8	Pass
11	24	62 -19.21			8	Pass

EUT		Action Camera		Model	ARG-A	C-9190	
Mode	;		802.11b 1Mbps	Test Voltage	DC3.7V		
Temperat	Temperature		24 deg. C,	Humidity 56%		56% RH	
Channel	Freq	uency	ency Power Spectral Density (dBm/10kH		Limit	Pass/ Fail	
	(M	(Hz)			(dBm/3kHz)		
1	2412		-19.92		8	Pass	
6	24	137	-20.02		8	Pass	
11	24	162	-20.08		8	Pass	

EUT			Action Camera Model		ARG-AC-9190	
Mode	;		802.11g 6Mbps	Test Voltage	DC3	.7V
Temperat	mperature		24 deg. C,	Humidity	56%	RH
Channel	Freq	uency	Power Spectral Density (dBm	n/10kHz)	Limit	Pass/ Fail
	(M	(Hz)			(dBm/3kHz)	
1	24	112	-20.72	-20.72		Pass
6	24	137	-20.80		8	Pass
11	24	162	-21.24		8	Pass

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EUT		Action Camera		Model	ARG-A	C-9190	
Mode			802.11n HT20 6.5Mbps	Test Voltage	DC3.7V		
Temperat	ure		24 deg. C,	24 deg. C, Humidity		56% RH	
Channel	Freq	uency	Power Spectral Density (dBm/10kHz)		Limit	Pass/ Fail	
	(M	(Hz)			(dBm/3kHz)		
1	24	2412 -20.81			8	Pass	
6	2437 -20.88			8	Pass		
11	24	162	-21.31		8	Pass	

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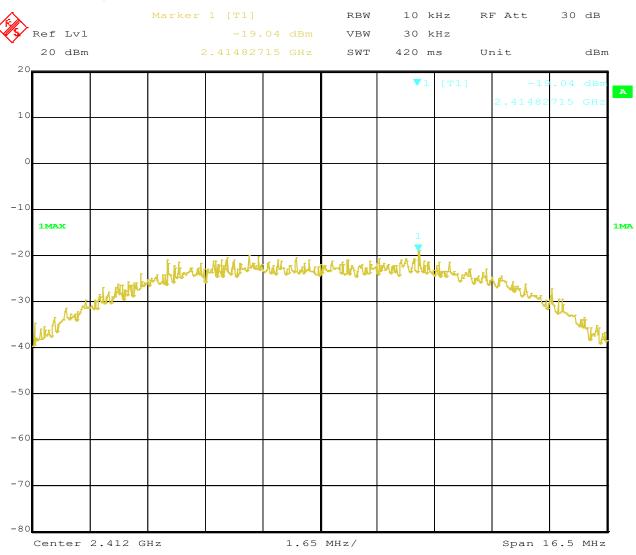
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# 9.5 Photo of Power Spectral Density Measurement

1.802.11b at 11Mbps of CH01



15.AUG.2024 15:44:11

Date:

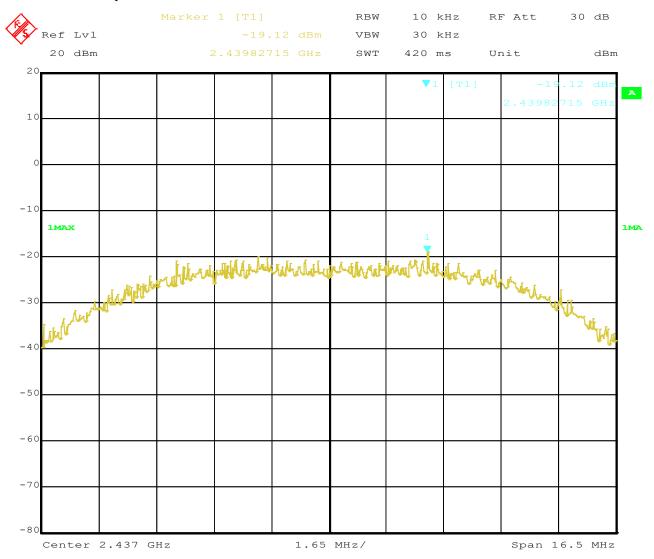
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## 2. 802.11b at 11Mbps at CH06



15.AUG.2024 15:40:13 Date:

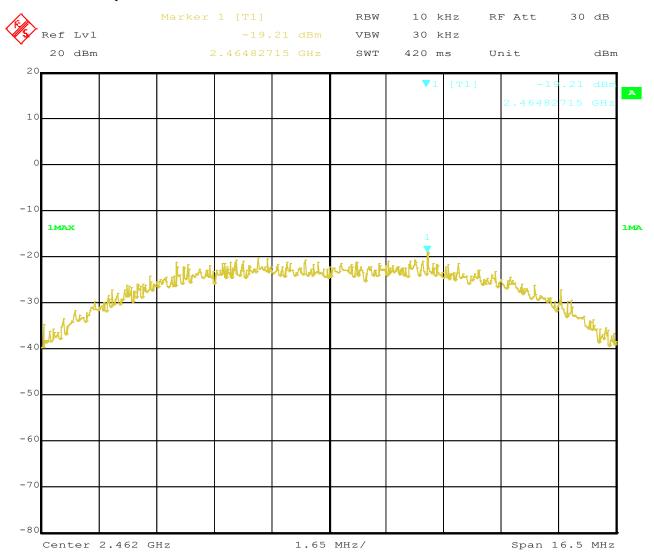
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## 3. 802.11b at 11Mbps of CH11



15.AUG.2024 15:34:57 Date:

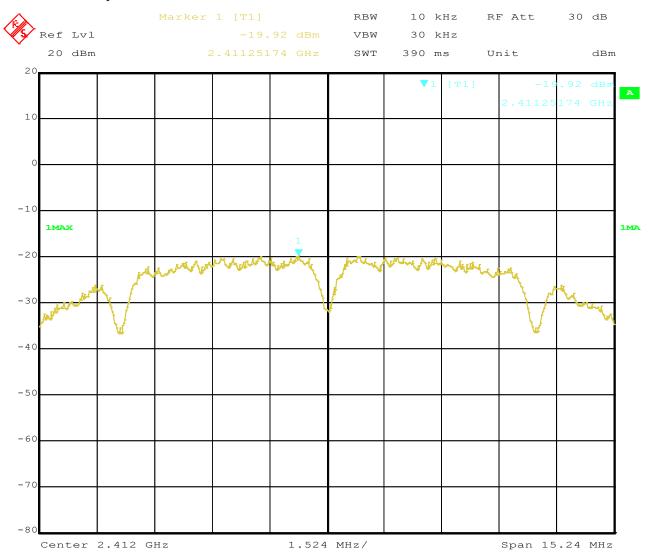
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# 4. 802.11b at 1Mbps of CH1



15.AUG.2024 15:21:10 Date:

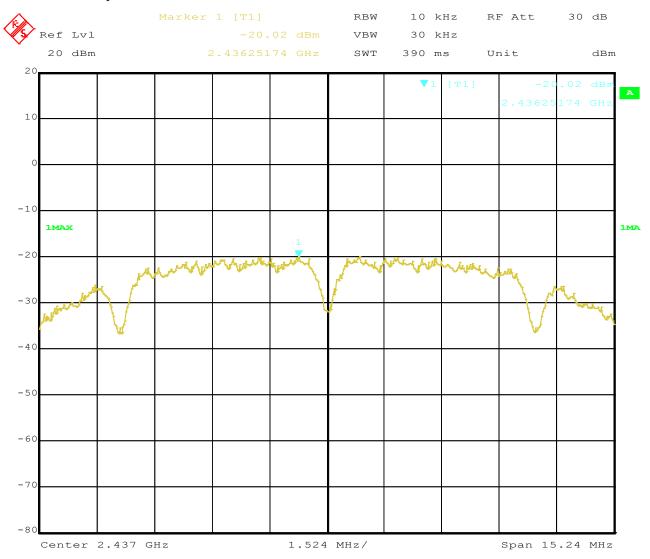
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# 5. 802.11b at 1Mbps of CH6



15.AUG.2024 15:23:28 Date:

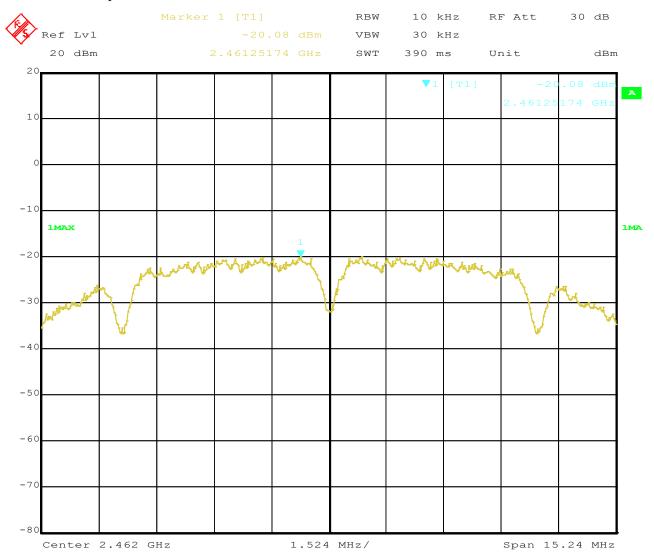
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# 6. 802.11b at 1Mbps of CH11



15.AUG.2024 15:33:09 Date:

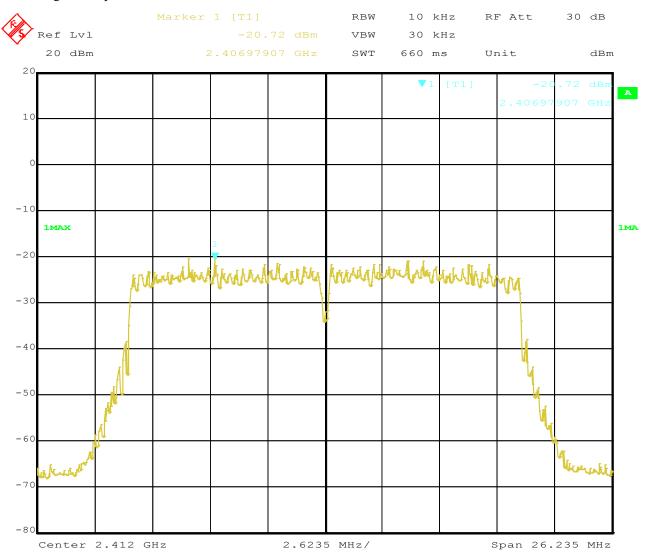
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# 7. 802.11g at 6Mbps of CH1



15.AUG.2024 15:11:33 Date:

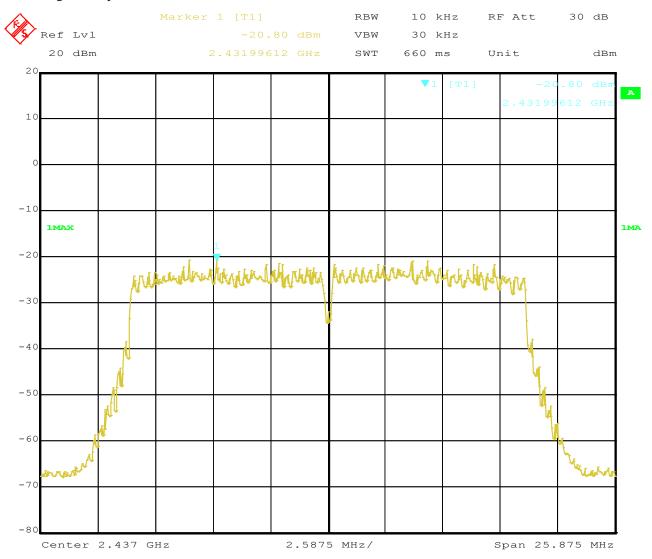
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# 8. 802.11g at 6Mbps of CH6



15.AUG.2024 15:15:55 Date:

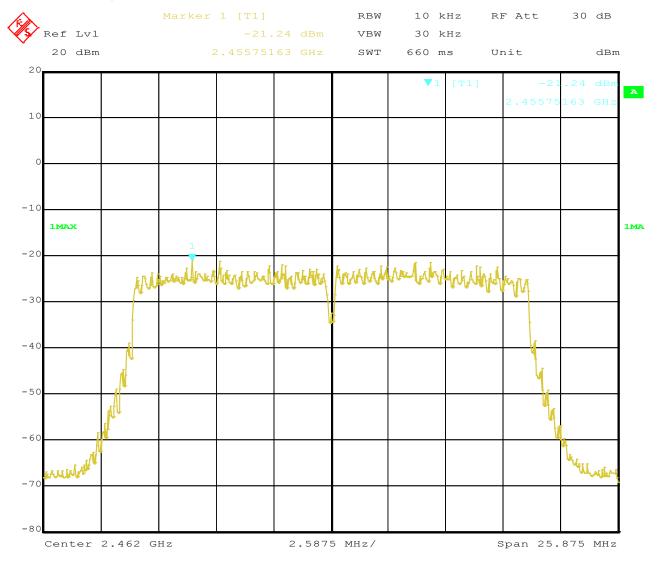
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# 9. 802.11g at 6Mbps of CH11



15.AUG.2024 15:18:06 Date:

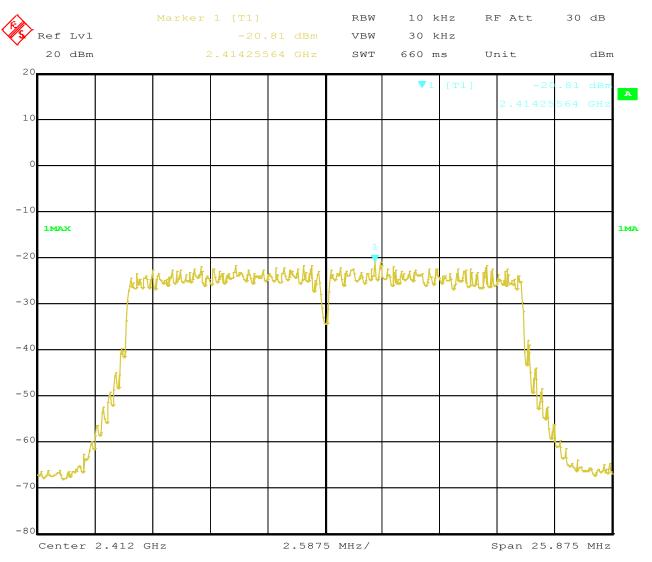
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## 10. 802.11n at HT20 of CH01



15.AUG.2024 14:51:31 Date:

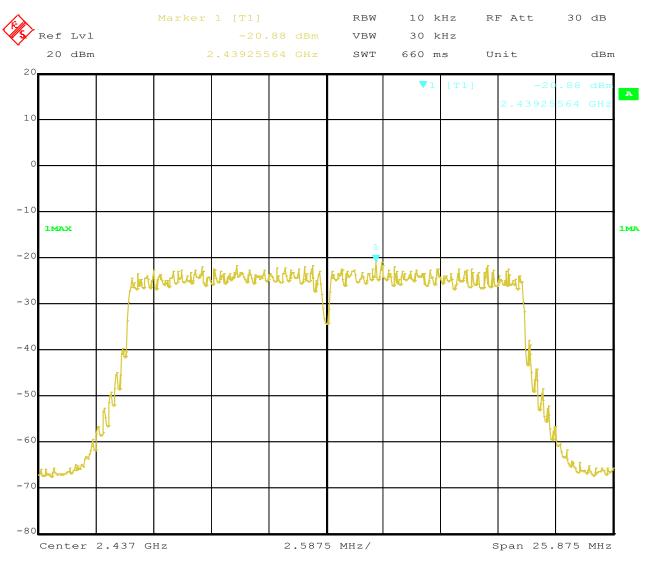
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## 11. 802.11n at HT20 of CH06



15.AUG.2024 15:00:39 Date:

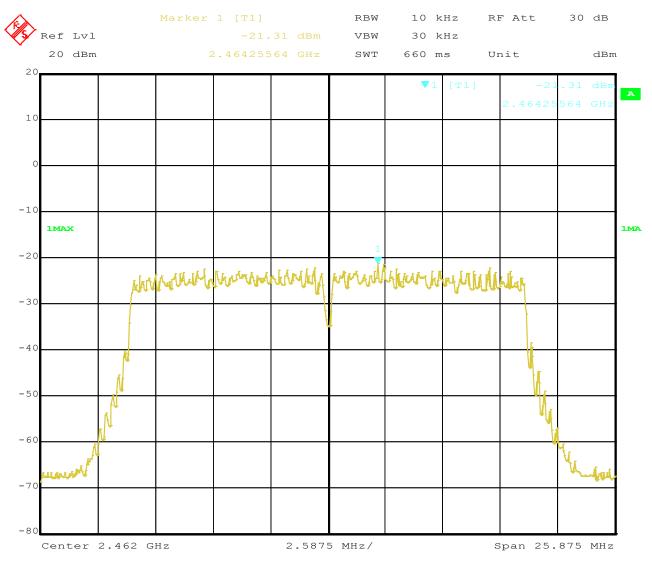
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## 12. 802.11n at HT20 of CH11



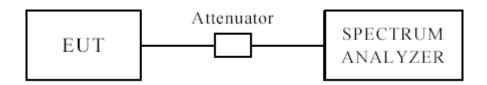
15.AUG.2024 15:03:51 Date:

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# 10 Out of Band Measurement 10.1 Test Setup for band edge



The restricted band requirement based on radiated emission test; please see the clause 6 for the test setup

## 10.2 Limits of Out of Band Emissions Measurement

- 1. Below –30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
- 2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

## **10.3 Test Procedure**

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of radiated emission test. (Peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector)

For bandage test, the spectrum set as follows: RBW=100, VBW=300 kHz. A conducted measurement used

## 10.4 Test Result

Please see next pages

Note: 1. For band-edge measurement, the frequency from 30MHz-25GHz was tested. And It met the FCC rule.

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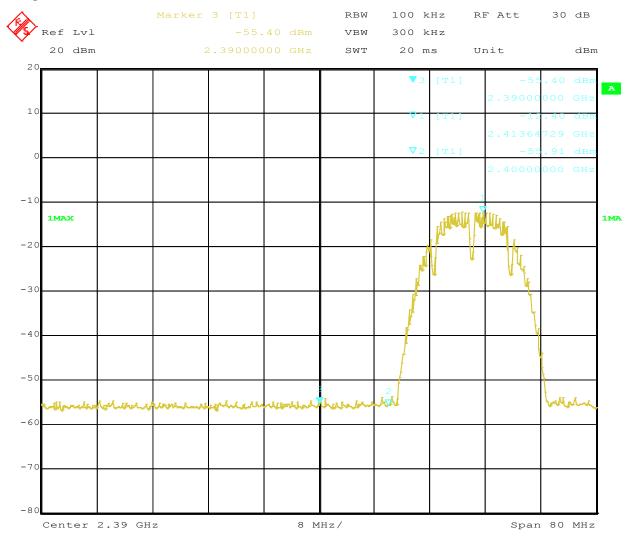
## For 802.11b mode

# CH01 at 1Mbps

### 10.4 Band-edge Measurement

EUT	Action Camera	Model	ARG-AC-9190
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

# **Test Figure:**



15.AUG.2024 Date: 09:22:36

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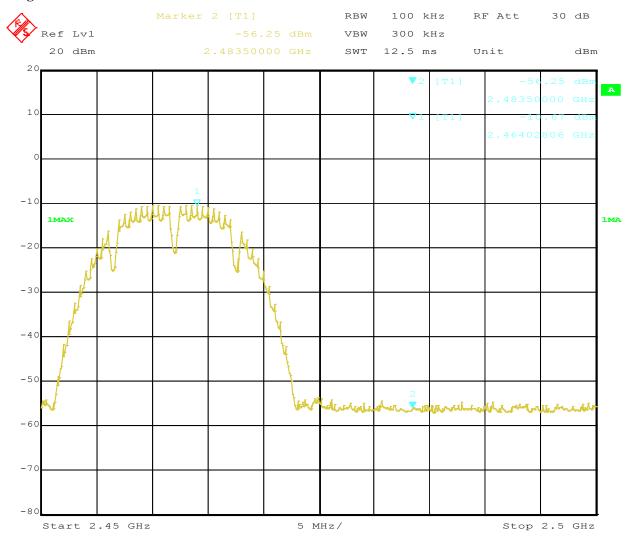


# CH11 at 1Mbps

### 10.4 Band-edge Measurement

EUT	Action Camera	Model	ARG-AC-9190
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

# **Test Figure:**



15.AUG.2024 09:26:31 Date:

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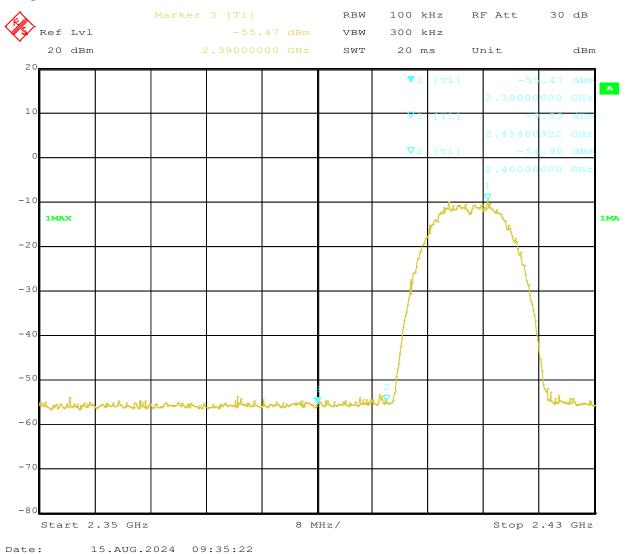
## For 802.11b mode

# CH01 at 11Mbps

### 10.4 Band-edge Measurement

EUT	Action Camera	Model	ARG-AC-9190
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

# **Test Figure:**



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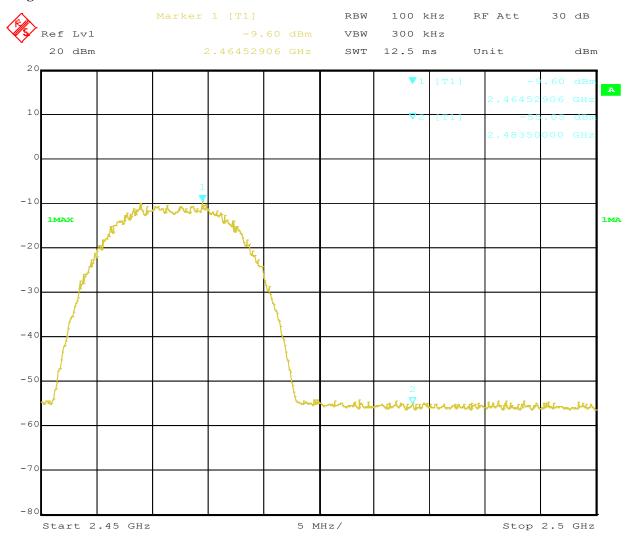


# CH11 at 11Mbps

### 10.4 Band-edge Measurement

EUT	Action Camera	Model	ARG-AC-9190
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

# **Test Figure:**



15.AUG.2024 09:31:11 Date:

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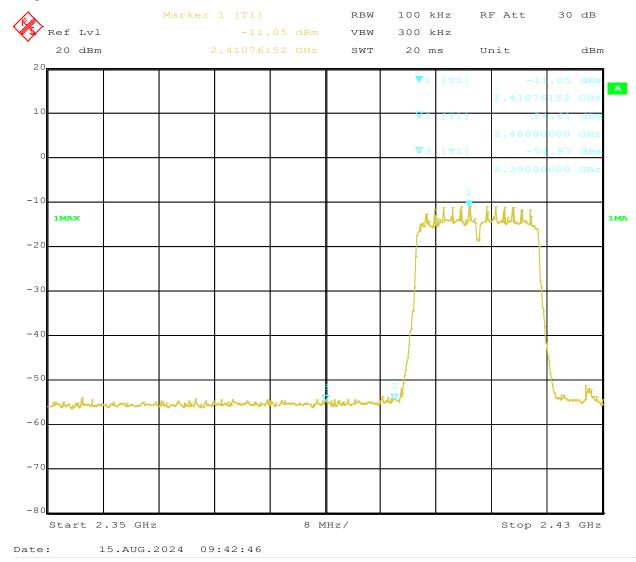
## For 802.11g mode

CH01 at 6Mbps

### 10.4 Band-edge Measurement

EUT	Action Camera	Model	ARG-AC-9190
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

# **Test Figure:**



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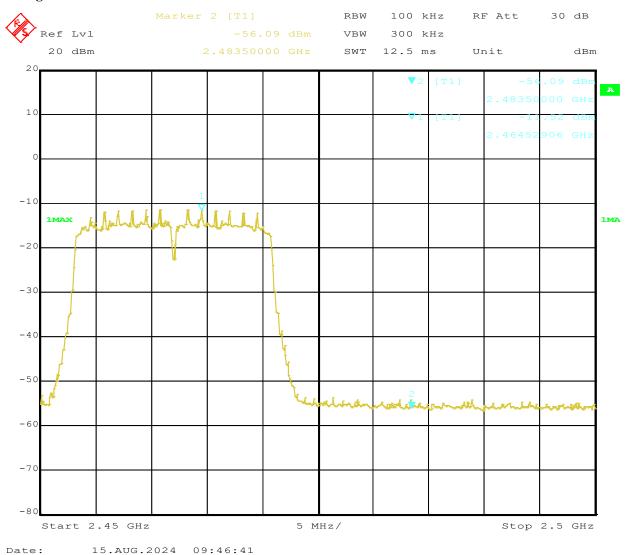


# CH11 at 6Mbps

### Band-edge Measurement 10.4

EUT	Action Camera	Model	ARG-AC-9190
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

# **Test Figure:**



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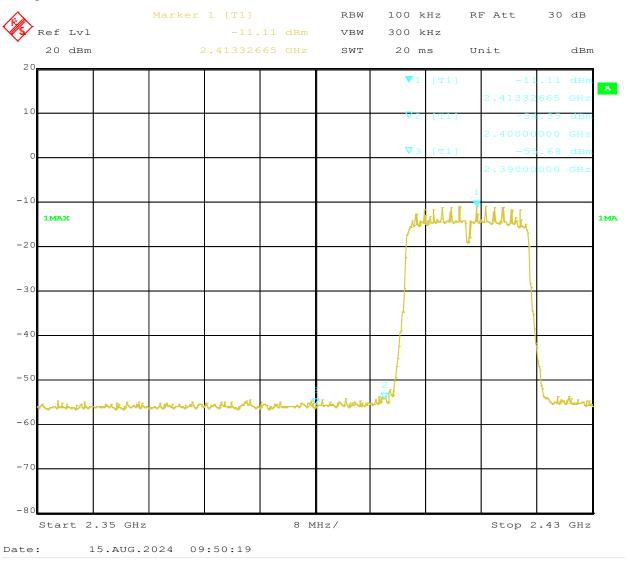
## For 802.11n (HT20) mode

# CH01 at 6.5Mbps

### 10.4 Band-edge Measurement

EUT	Action Camera	Model	ARG-AC-9190
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

# **Test Figure:**



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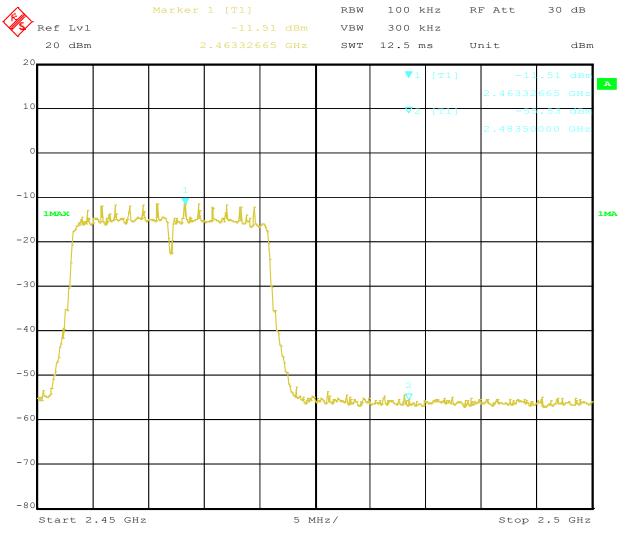


# CH11 at 6.5Mbps

### 10.4 Band-edge Measurement

EUT	Action Camera	Model	ARG-AC-9190
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

# **Test Figure:**



15.AUG.2024 09:52:00 Date:

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### 10.5 Restricted band Measurement

EUT	Action Camera			Mo	odel	ARG-AC-9190
Mode	Kee	eping Transmitting		Test Voltage		DC3.7V
Temperature		24 deg. C,		Hun	nidity	56% RH
Test Result:	Pass			Dete	ector	PK
802.11b mode, Low Channel, Horizontal						
2390 MHz	PK (dBµV/m)	38.29	Limit			$74(dB\mu V/m)$
	AV (dBμV/m)					54(dBµV/m)
802.11b mode, Low Channel, Vertical						
2390 MHz	PK (dBμV/m)	37.35	Limit			74(dBµV/m)
	AV (dBμV/m)					54(dBµV/m)

### 10.5 Restricted band Measurement

EUT	Action Camera			Model		ARG-AC-9190	
Mode	Ke	eping Transmitting		Test Voltage		DC3.7V	
Temperature	24 deg. C,			Hun	nidity	56% RH	
Test Result:		Pass			ector	PK	
802.11b mode, High Channel, Horizontal							
2483.5 MHz	PK (dBμV/m)	40.23	Limit			$74(dB\mu V/m)$	
	AV (dBμV/m)				Limit		
	802.11b mode, High Channel, Vertical						
2483.5 MHz	PK (dBμV/m)	38.18	Limit			74(dBµV/m)	
	AV (dBμV/m)		Limi	ıı		$54(dB\mu V/m)$	

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### 10.5 Restricted band Measurement

EUT	Action Camera			Model		ARG-AC-9190
Mode	Kee	eping Transmitting		Test Voltage		DC3.7V
Temperature		24 deg. C,		Hun	nidity	56% RH
Test Result:	Pass			Det	ector	PK
802.11g mode, Low Channel, Horizontal						
2390 MHz	PK (dBµV/m)	40.39	Limit			$74(dB\mu V/m)$
	AV (dBμV/m)					54(dBµV/m)
802.11g mode, Low Channel, Vertical						
2390 MHz	PK (dBµV/m)	39.12	Limit			74(dBµV/m)
	AV (dBμV/m)					54(dBµV/m)

### 10.5 Restricted band Measurement

EUT	Action Camera			Model		ARG-AC-9190		
Mode	Ke	eping Transmitting		Test Voltage		DC3.7V		
Temperature	24 deg. C,			Hur	nidity	56% RH		
Test Result:	Pass			Det	ector	PK		
802.11g mode, High Channel, Horizontal								
2483.5 MHz	PK (dBµV/m)	41.73	T :			$74(dB\mu V/m)$		
	AV (dBμV/m)		Limit		Limit			$54(dB\mu V/m)$
	802.11g mode, High Channel, Vertical							
2483.5 MHz	PK (dBμV/m)	39.56	Limit			74(dBμV/m)		
	AV (dBμV/m)		LIIII	IL		$54(dB\mu V/m)$		

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### 10.5 Restricted band Measurement

EUT	Action Camera			Mo	odel	ARG-AC-9190
Mode	Kee	eping Transmitting		Test Voltage		DC3.7V
Temperature		24 deg. C,		Hun	nidity	56% RH
Test Result:	Pass			Dete	ector	PK
802.11n HT20 mode, Low Channel, Horizontal						
2390 MHz	PK (dBμV/m)	42.63	Limit		74(dBµV/m)	
	AV (dBμV/m)					$54(dB\mu V/m)$
	802.11n HT20 mode, Low Channel, Vertical					
2390 MHz	PK (dBμV/m)	40.57	Limit			74(dBµV/m)
	AV (dBμV/m)					54(dBµV/m)

### 10.5 Restricted band Measurement

EUT	Action Camera			Model		ARG-AC-9190
Mode	Ke	eping Transmitting		Test Voltage		DC3.7V
Temperature	24 deg. C,			Humidity		56% RH
Test Result:	Pass			Det	ector	PK
802.11n HT20 mode, High Channel, Horizontal						
2483.5 MHz	PK (dBµV/m)	43.87	T :			$74(dB\mu V/m)$
	AV (dBμV/m)		Limit			$54(dB\mu V/m)$
	802.11n HT20 mode, High Channel, Vertical					
2483.5 MHz	PK (dBμV/m)	42.29	Limit			74(dBμV/m)
	$AV (dB\mu V/m)$		LIIII	IL		$54(dB\mu V/m)$

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# 11.0 Antenna Requirement

# 11.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the mount in dB that the directional gain of the antenna exceeds 6 dBi.

## 11.2 Antenna Connected construction

FPC antenna with gain 1.65dBi Max (Get from the antenna specification)

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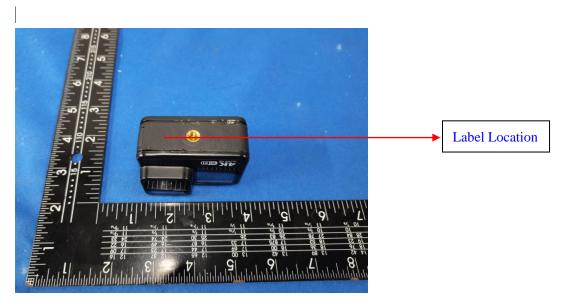


## 12.0 FCC ID Label

# FCC ID: 2AUGWARG-AC-9190

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

## **Mark Location:**



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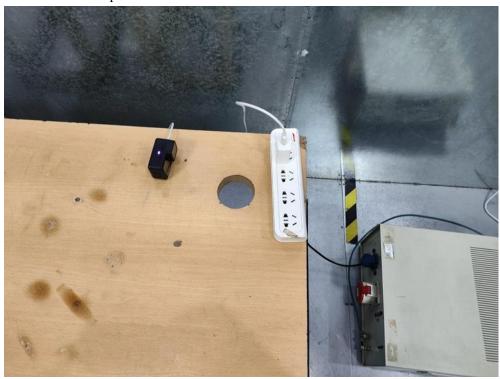
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### 13.0 **Photo of testing**

Conducted Emission Test Setup:



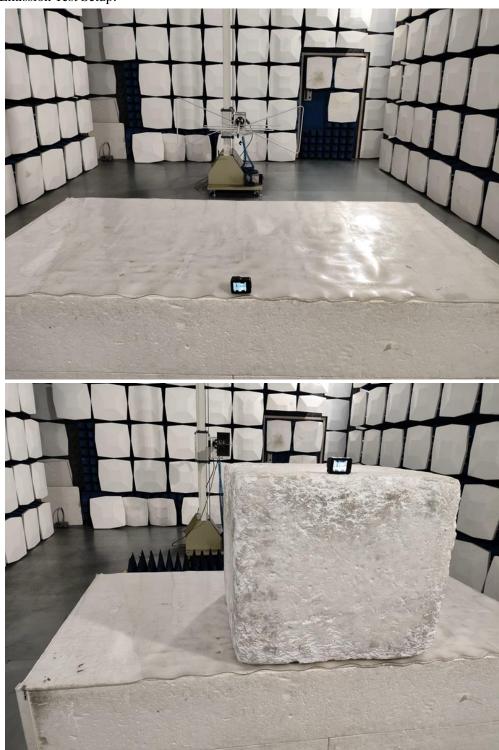
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# Radiated Emission Test Setup:



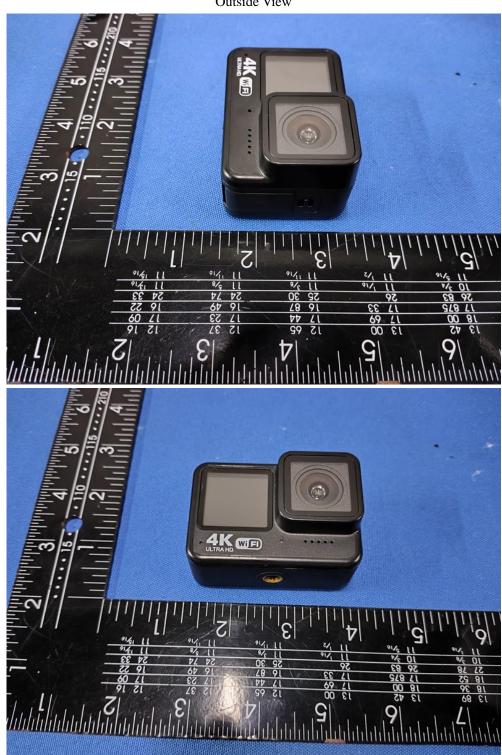
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Outside View



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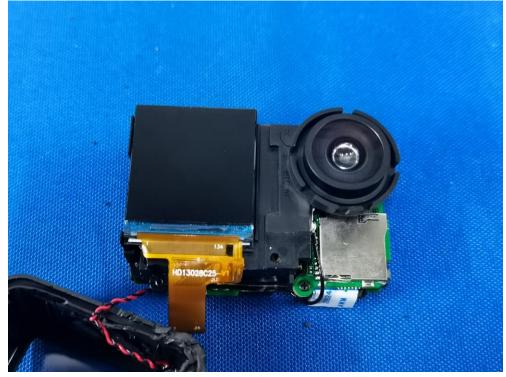
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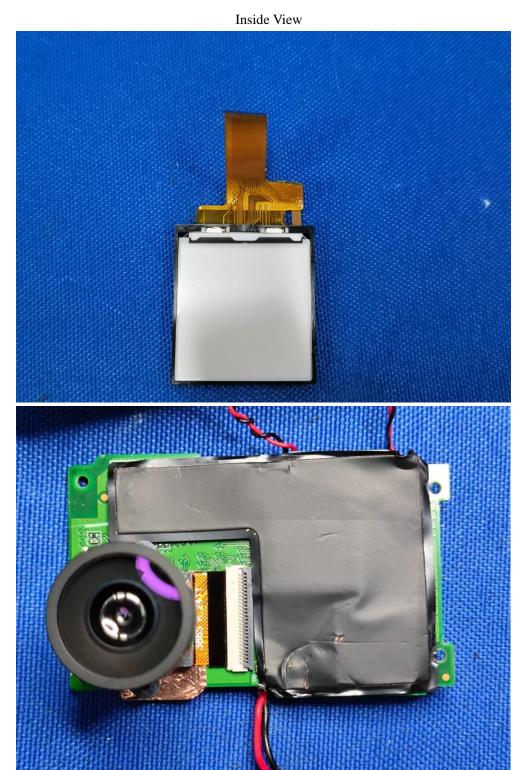
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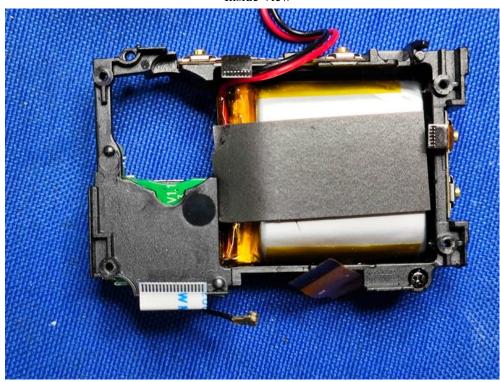
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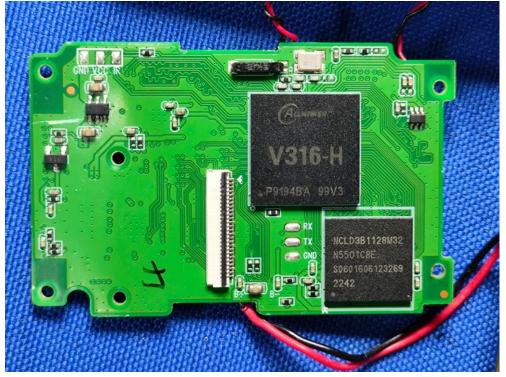
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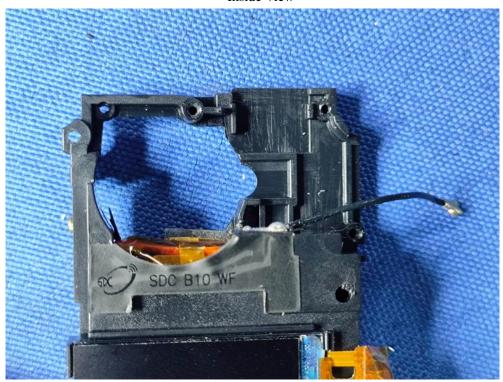
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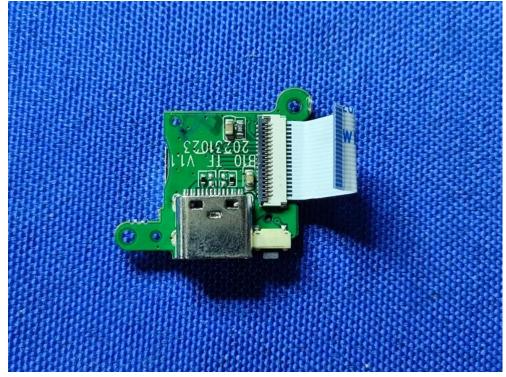
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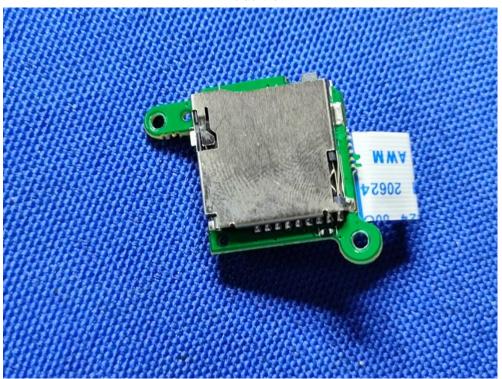
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-End of the report-