TEST REPORT

Report No.	CISRR25041411904
Project No.	CISR250414119
FCC ID	2A66K-FNK-DAX234GB
Applicant	Shenzhen Harvest Kang Technology Co., Ltd
Address	3rd Floor, Building A, Danli Industrial Park, No. 16, Kangzheng Road, Danzhutou, Buji, Longgang District, Shenzhen, Guangdong, China
Manufacturer	Shenzhen Harvest Kang Technology Co., Ltd
Address	3rd Floor, Building A, Danli Industrial Park, No. 16, Kangzheng Road, Danzhutou, Buji, Longgang District, Shenzhen, Guangdong, China
Product Name	4G camera
Trade Mark	FNKvision
Model/Type reference	FNK-DAX23/4G(B)
Listed Model(s)	FNK-D15/4G(B), FNK-D23Z/4G(B), FNK-LP7, FNK-DZ14/4G(B), FNK-LPG4, FNK-DZ41/4G(B), FNK-GD9/4G(B), FNK-D15Z/4G(B), FNK-DG31/4G(B), FNK-G10/4G(B), FNK-G11/4G(B), FNK-DG20/4G(B), FNK-DG22/4G(B),FNK-DG25/4G(B),FNK-DG26/4G(B), FNK-DG27/4G(B), FNK-DG28/4G(B), FNK-DG29/4G(B), FNK-DG30/4G(B)
Standard	47 CFR Part 22H FCC CFR 47 Part 2 ANSI/TIA-603-E (2016)/ ANSI C63.26-2015 FCC KDB 971168 D01 v03r01 FCC KDB 971168 D02 v02r01 FCC KDB 412172 D01 v01r01 FCC CFR 47 Part 15.207
Test date	April 16, 2025 to May 9, 2025
Issue date	May 9, 2025
Test result	**Complied**

Jimmy Huang

Prepared by: Jimmy Huang

Genry Long

Approved by: Genry Long

The test results relate only to the tested samples.

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1. REPORT VERSION

Version No.	Issue date	Description
00	May 9, 2025	Original

2. TEST DESCRIPTION

No.	Test Item	Standard Requirement	Result
1	Effective (Isotropic) Radiated Power Output	47 CFR Part 2.1046, Part 22.913	Pass
2	Peak To Average Ratio	47 CFR Part 2.1046	Pass
3	Bandwidth	47 CFR Part 2.1049(h)	Pass
4	Out of Band Emission	47 CFR Part 2.1051, Part 22.917(a)	Pass
5	Spurious Unwanted Emission	47 CFR Part 2.1051, Part 22.917(a)	Pass
6	Radiated Emission	47 CFR Part 2.1053, Part 22.917(a)	Pass
7	Frequency Stability	47 CFR Part 2.1055, Part 22.355	Pass
8	Conducted Emission at AC power line	47 CFR 15.207(a)	Pass

Note:
– The measurement uncertainty is not included in the test result.
– The EUT are three LTE modules, not supported for MIMO.

3. SUMMARY

3.1. Product Description *

Main unit information:	
Product Name:	4G camera
Trade Mark:	FNKvision
Model No.:	FNK-DAX23/4G(B)
Listed Model(s):	FNK-D15/4G(B), FNK-D23Z/4G(B), FNK-LP7, FNK-DZ14/4G(B), FNK-LPG4, FNK-DZ41/4G(B), FNK-GD9/4G(B), FNK-D15Z/4G(B), FNK-DG31/4G(B), FNK-G10/4G(B), FNK-G11/4G(B), FNK-DG20/4G(B), FNK-DG22/4G(B),FNK-DG25/4G(B),FNK-DG26/4G(B), FNK-DG27/4G(B), FNK-DG28/4G(B), FNK-DG29/4G(B), FNK-DG30/4G(B)
Model difference:	The difference between different models is that in this application, due to different sales channels and different model names.
Power supply:	N/A
Hardware version:	N/A
Software version:	N/A
Accessory unit information:	
Battery information:	N/A

3.2. Radio Specification Description *

Support Band	☒ E-UTRA Band 5(U.S.-Band)
Type Of Modulation	QPSK/16QAM
Antenna type:	External Antenna
Antenna gain:	3dBi

Note:

1) *: Since the above information is provided by the applicant relevant results or conclusions of this report are only made for these information , Bangce is not responsible for the authenticity, integrity and results of the information and/or the validity of the conclusion.

3.3. Modification of EUT

No modifications are made to the EUT during all test items.

3.4. Deviation from standards

None

3.5. Testing Site

Laboratory Name	Shenzhen Bangce Testing Technology Co., Ltd.
Laboratory Location	101, building 10, Yunli Intelligent Park, Shutianpu community, Matian Street, Guangming District, Shenzhen，Guangdong, China
Contact information	Tel: 86-755-2319 6848, email: service@cis-cn.net Website: http://www.cis-cn.net/
FCC registration number	736346
FCC designation number	CN1372

4. TEST CONFIGURATION

4.1. Descriptions of test mode

No	Test mode	Modulation
TM1	TX CH-L	QPSK/16QAM
TM2	TX CH-M	QPSK/16QAM
TM3	TX CH-H	QPSK/16QAM
TM4	Charging	--

4.2. Test sample information

Type	Sample No.
Engineer sample	CISR250414119-S01
Normal sample	CISR250414119-S02

4.3. Environmental conditions

Type	Requirement
Temperature:	15~35°C
Relative Humidity:	25~75%
Air Pressure:	860~1060mbar

4.4. Statement of the measurement uncertainty

No.	Test Items	Measurement Uncertainty
1	AC Conducted Emission	1.63dB
2	Output Power	1.34dB
3	6dB Bandwidth	0.002%
4	99% Occupied Bandwidth	0.002%
5	Conducted Band Edge and Spurious Emission	1.93dB
6	Radiated Band Edge Emission	3.76dB for 30MHz-1GHz 3.80dB for above 1GHz
7	Radiated Spurious Emission	3.76dB for 30MHz-1GHz 3.80dB for above 1GHz
8	Frequency Stability	81.3Hz

The measurement uncertainties shown above were calculated in accordance with the requirements of ANSI C63.26. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95% level of confidence. Measurement uncertainty is not taken into account when stating conformity with a specified requirement.

4.5. Equipment Used during the Test

Equipment	Manufacture	Model No.	Serial No.	Last cal.	Cal Interval
9*6*6 anechoic chamber	SKET	9.3*6.3*6	N/A	2024.09.01	3Year
Spectrum analyzer	Agilent	N9020A	MY50530263	2025.01.08	1Year
Receiver	ROHDE&SCHWARZ	ESCI	100853	2025.01.08	1Year
Spectrum analyzer	R&S	FSV-40N	/	2025.01.08	1Year
Bilog Antenna	Schwarzbeck	VULB 9163	1463	2025.01.08	2Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	2487	2025.01.08	2Year
Active Loop Antenna	SCHWARZBECK	FMZB 1519B	/	2025.01.08	2Year
RF Cable	Tonscend	Cable 1	/	2025.01.08	1Year
RF Cable	Tonscend	Cable 2	/	2025.01.08	1Year
RF Cable	SKET	Cable 3	/	2025.01.08	1Year
Pre-amplifier	Tonscend	TAP9K3G32	AP21G806153	2025.01.08	1Year
Pre-amplifier	Tonscend	TAP01018050	AP22E806229	2025.01.08	1Year
L.I.S.N.#1	Schwarzbeck	NSLK8127	/	2025.01.08	1Year
L.I.S.N.#2	ROHDE&SCHWARZ	ENV216	/	2025.01.08	1 Year
Horn Antenna	SCHWARZBECK	BBHA9170	1130	2025.01.08	2 Year
Preamplifier	Tonscend	TAP18040048	AP21C806126	2025.01.08	1 Year
variable-frequency power source	Pinhong	PH1110	/	2025.01.08	1 Year
6dB Attenuator	SKET	DC-6G	/	N/A	N/A
Artificial power network	Schwarzbeck	NSLK8127	8127-01096	2025.01.08	1 Year
EMI Test Receiver	Rohde&schwarz	ESCI7	100853	2025.01.08	1 Year
8-wire Impedance Stabilization Network	Schwarzbeck	NTFM 8158	8158-00337	2025.01.08	1 Year
Artificial power network	Schwarzbeck	ENV216	/	2025.01.08	1 Year
Antenna tower	SKET	Bk-4AT-BS	AT2021040101-V1	N/A	N/A
Power Meter	WCS	WCS-PM	WCSPM230405A	2025.01.08	1 Year
Wideband Radio Communication Tester	Rohde&schwarz	CMW500	131671	2025.01.08	1 Year

5. TEST RESULTS

5.1. Radio Spectrum Matter Test Results (RF)

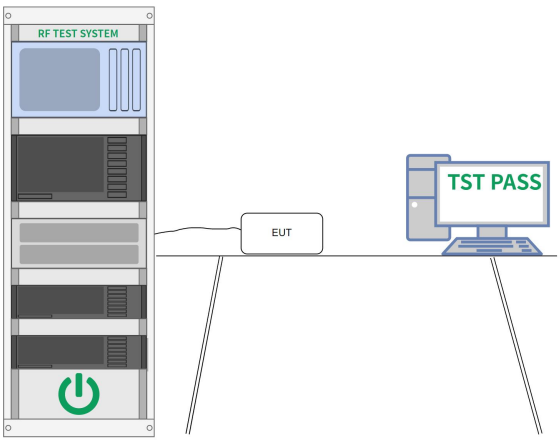
5.1.1. Effective (Isotropic) Radiated Power Output

Test Requirement:	47 CFR Part 2.1046, Part 22.913
Test Limit:	Band 5 The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.
Test Method:	ANSI C63.26-2015, Section 5.2.4.2
Procedure:	If the EUT cannot be configured to transmit continuously (i.e., burst duty cycle < 98%), then the following options can be implemented to facilitate measurement of the average power with an average power meter: a) A gated average power meter can be used to perform the measurement if the gating parameters can be adjusted such that the power is measured only during active transmission bursts at maximum output power levels. b) A conventional average power meter with no signal gating capability can also be used if the measured burst duty cycle is constant (i.e., duty cycle variations are less than or equal to ±2%) by performing the measurement over the on/off burst cycles and then correcting (increasing) the measured level by a factor equal to [10 log (1/duty cycle)]. See 5.2.4.3.4 for guidance with respect to measuring the transmitter duty cycle.

5.1.1.1. E.U.T. Operation

Operating Environment:					
Temperature:	24.6 ° C	Humidity:	52.4 %	Atmospheric Pressure:	101.2 kPa
Pre test mode:	TM1/TM2/TM3				
Final test mode:	TM1/TM2/TM3				

5.1.1.2. Test Setup Diagram



5.1.1.3. Test Result

PASS

5.1.1.4. Test Data

Please Refer to Appendix LTE for Details.

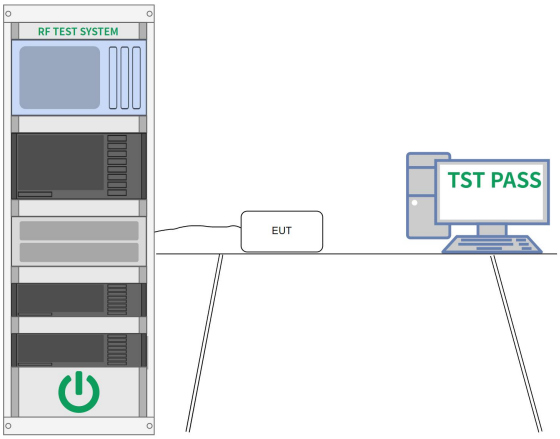
5.1.2. Peak To Average Ratio

Test Requirement:	47 CFR Part 2.1046
Test Limit:	The peak-to-average ratio (PAR) of the transmission must not exceed 13 dB.
Test Method:	ANSI C63.26-2015, Section 5.2.3.4
Procedure:	a) Set resolution/measurement bandwidth ≥ OBW or specified reference bandwidth. b) Set the number of counts to a value that stabilizes the measured CCDF curve. c) Set the measurement interval as follows: 1) For continuous transmissions, set to the greater of [10 × (number of points in sweep) × (transmission symbol period)] or 1 ms. 2) For burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize. Set the measurement interval to a time that is less than or equal to the burst duration. 3) If there are several carriers in a single antenna port, the peak power shall be determined for each individual carrier (by disabling the other carriers while measuring the required carrier) and the total peak power calculated from the sum of the individual carrier peak powers. d) Record the maximum PAPR level associated with a probability of 0.1%. e) The peak power level is calculated form the sum of the PAPR value from step d) to the measured average power.

5.1.2.1. E.U.T. Operation

Operating Environment:					
Temperature:	24.6 ° C	Humidity:	52.4 %	Atmospheric Pressure:	101.2 kPa
Pre test mode:	TM1/TM2/TM3				
Final test mode:	TM1/TM2/TM3				

5.1.2.2. Test Setup Diagram



5.1.2.3. Test Result

PASS

5.1.2.4. Test Data

Please Refer to Appendix LTE for Details.

5.1.3. Bandwidth

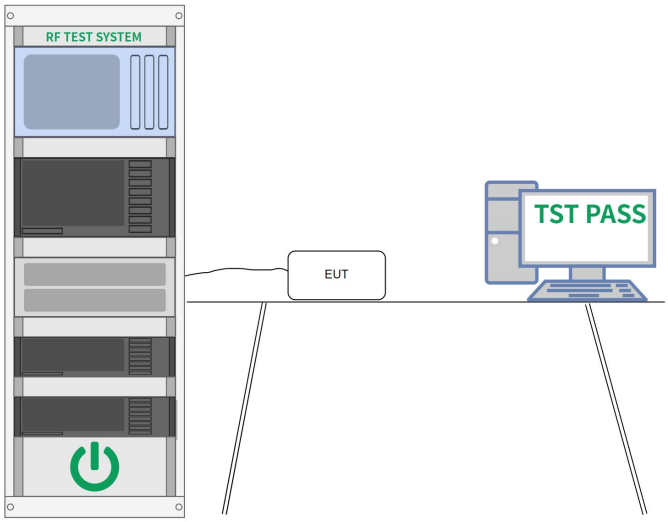
Test Requirement:	47 CFR Part 2.1049(h)
Test Limit:	OBW: No limit, only for report use. EBW: No limit, only for report use.
Test Method:	ANSI C63.26-2015, Section 5.4
Procedure:	OBW: a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (typically a span of 1.5 × OBW is sufficient). b) The nominal IF filter 3 dB bandwidth (RBW) shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set ≥ 3 × RBW. c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3. NOTE—Step a), step b), and step c) may require iteration to adjust within the specified tolerances. d) Set the detection mode to peak, and the trace mode to max-hold. e) If the instrument does not have a 99% OBW function, recover the trace data points and sum directly in linear power terms. Place the recovered amplitude data points, beginning at the lowest frequency, in a running sum until 0.5% of the total is reached. Record that frequency as the lower OBW frequency. Repeat the process until 99.5% of the total is reached and record that frequency as the upper OBW frequency. The 99% power OBW can be determined by computing the difference these two frequencies. f) The OBW shall be reported and plot(s) of the measuring instrument display shall be provided with the test report. The frequency and amplitude axis and scale shall be clearly labeled. Tabular data can be reported in addition to the plot(s). EBW: a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal to make the measurement. b) The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set ≥ 3 × RBW. c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3. NOTE—Step a), step b), and step c) may require iteration to adjust within the specified tolerances. d) The dynamic range of the spectrum analyzer at the selected RBW shall be more than 10 dB below the target “-X dB” requirement, i.e., if the requirement calls for measuring the -26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be at least 36 dB below

	the reference level. e) Set spectrum analyzer detection mode to peak, and the trace mode to max hold. f) Determine the reference value by either of the following: 1) Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value). 2) Set the EUT to transmit an unmodulated carrier. Set the spectrum analyzer marker to the level of the carrier. g) Determine the “-X dB amplitude” as equal to (Reference Value - X). Alternatively, this calculation can be performed on the spectrum analyzer using the delta-marker measurement function. h) If the reference value was determined using an unmodulated carrier, turn the EUT modulation on, then either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise the trace from step f) shall be used for step i). i) Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “-X dB amplitude” determined in step f). If a marker is below this “-X dB amplitude” value it should be as close as possible to this value. The OBW is the positive frequency difference between the two markers. The spectral envelope can cross the “-X dB amplitude” at multiple points. The lowest or highest frequency shall be selected as the frequencies that are the farthest away from the center frequency at which the spectral envelope crosses the “-X dB amplitude.” j) The OBW shall be reported by providing plot(s) of the measuring instrument display, to include markers depicting the relevant frequency and amplitude information (e.g., marker table). The frequency and amplitude axis and scale shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

5.1.3.1. E.U.T. Operation

Operating Environment:					
Temperature:	24.6 ° C	Humidity:	52.4 %	Atmospheric Pressure:	101.2 kPa
Pre test mode:	TM1/TM2/TM3				
Final test mode:	TM1/TM2/TM3				

5.1.3.2. Test Setup Diagram



5.1.3.3. Test Result

PASS

5.1.3.4. Test Data

Please Refer to Appendix LTE for Details.

5.1.4. Out of Band Emission

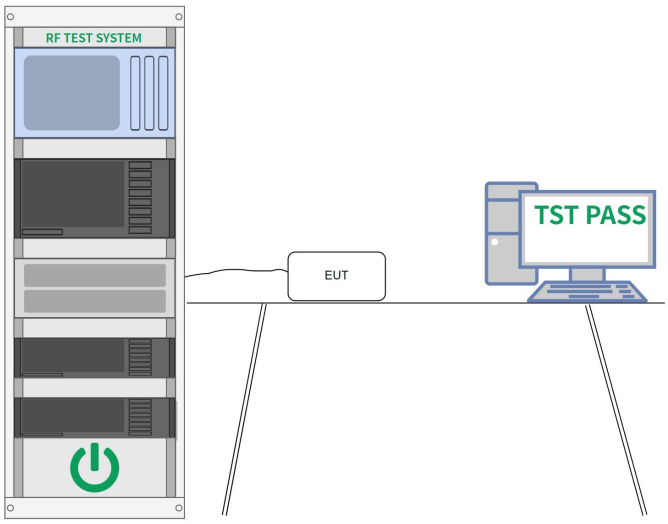
Test Requirement:	47 CFR Part 2.1051, Part 22.917(a)
Test Limit:	22.917(a), 24.238 (a) The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. 27.53(m)(4) (4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6)of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.
Test Method:	47 CFR Part 22.917(b) ANSI C63.26-2015, Section 5.7.3
Procedure:	(1) In the spectrum below 1 GHz, instrumentation should employ a reference bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy, provided that the measured power is integrated over the full required reference bandwidth ((2) In the spectrum above 1 GHz, instrumentation should employ a reference bandwidth of 1 MHz. a) Set the spectrum analyzer center frequency to the block, band, or channel edge frequency. b) Set the span wide enough to capture the fundamental emission closest to the authorized block or band edge, and to include all modulation products that spill into the immediately adjacent frequency band. In some cases, it may be possible to set the center frequency and span so as to encompass the fundamental emission and the unwanted out-of-band (band-edge) emissions on either side of the authorized block, band, or channel. This can be accomplished with a single (slow) sweep, if adequate overload protection and sufficient dynamic range can be maintained. c) Set the number of points in sweep ≥ 2 × span / RBW. d) Sweep time should be auto for peak detection. For rms detection the sweep time should be set as follows: 1) If the device can be configured to transmit continuously (duty cycle ≥ 98%), set the (sweep time) > (number of points in sweep) × (symbol period) (e.g., by a factor of 10 × symbol period × number of points). Increasing the sweep time (i.e., slowing the sweep speed) will allow for averaging over multiple symbols

	2) If the device cannot transmit continuously (duty cycle < 98%), a gated sweep shall be used when possible (i.e., gate triggered such that the analyzer only sweeps when the device is transmitting at full power), set the sweep time > (number of points in sweep) × (symbol period) but the sweep time shall always be maintained at a value that is less than or equal to the minimum transmission time. 3) If the device cannot be configured to transmit continuously (duty cycle < 98%) and a freerunning sweep must be used, set the sweep time so that the averaging is performed over multiple on/off cycles by setting the sweep time > (number of points in sweep) × (transmitter period) (i.e., the transmit on-time + the off-time). The spectrum analyzer readings shall subsequently be corrected by [10 log (1/duty cycle)]. This assumes that the transmission period and duty cycle is relatively constant (duty cycle variation ≤ ±2%). 4) If the device cannot be configured to transmit continuously and a free-running sweep must be used, and if the transmissions exhibit a non-constant duty cycle (duty cycle variations > ±2%), set the sweep time so that the averaging is performed over the on-period by setting the sweep time > (symbol period) × (number of points), while also maintaining the sweep time < (transmitter on-time). The trace mode shall be set to max hold, since not every display point will be averaged only over just the on-time. Thus, multiple sweeps (e.g., 100) in maximum hold are necessary to ensure that the maximum power is measured. e) The test report shall include the plots of the measuring instrument display and the measured data. f) See Annex I for example emission mask plots.

5.1.4.1. E.U.T. Operation

Operating Environment:					
Temperature:	24.6 ° C	Humidity:	52.4 %	Atmospheric Pressure:	101.2 kPa
Pre test mode:	TM1/TM3				
Final test mode:	TM1/TM3				

5.1.4.2. Test Setup Diagram



5.1.4.3. Test Result

PASS

5.1.4.4. Test Data

Please Refer to Appendix LTE for Details.

5.1.5. Spurious Unwanted Emission

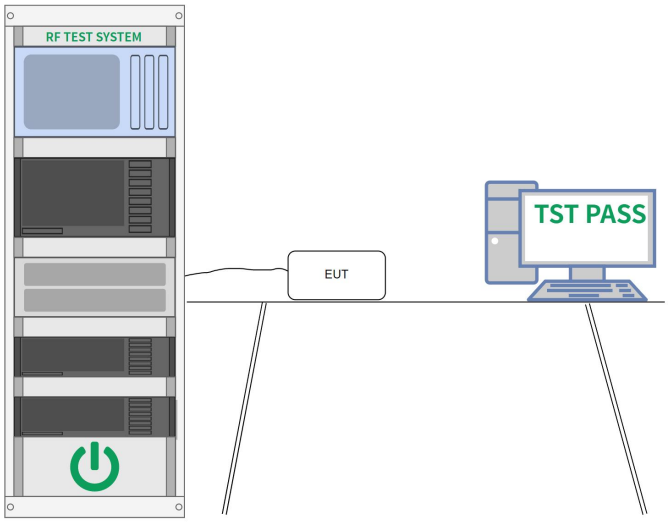
Test Requirement:	47 CFR Part 2.1051, Part 22.917(a)
Test Limit:	The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.
Test Method:	47 CFR Part 22.917(b) ANSI C63.26-2015, Section 5.7.3
Procedure:	(1) In the spectrum below 1 GHz, instrumentation should employ a reference bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy, provided that the measured power is integrated over the full required reference bandwidth ((2) In the spectrum above 1 GHz, instrumentation should employ a reference bandwidth of 1 MHz. a) Set the spectrum analyzer start frequency to the lowest frequency generated by the EUT, without going below 9 kHz, and the stop frequency to the lower frequency covered by the measurements previously performed in 5.7.3. As an alternative, the stop frequency can be set to the value specified in 5.1.1, depending on the EUT operating range, if the resulting plot can clearly demonstrate compliance for all frequencies not addressed by the out-of-band emissions measurements performed as per 5.7.3. b) When using an average power (rms) detector, ensure that the number of points in the sweep ≥ 2 × (span / RBW). This may require that the measurement range defined by the start and stop frequencies be subdivided, depending on the spectrum analyzer capabilities. This requirement does not apply to peak-detected power measurements. When average power is specified by the applicable regulation, a peak-detector can be utilized for preliminary measurements to accommodate wider frequency spans. Any emissions found in the preliminary measurement to exceed the applicable limit(s) shall be further examined using a power averaging (rms) detector with the minimum number of measurement points as defined above. c) The sweep time should be set to auto-couple for performing peak-detector measurements. For measurements that use a power averaging (rms) detector, the sweep time shall be set as described for out-of-band emissions measurements in item d) of 5.7.3. d) Identify and measure the highest spurious emission levels in each frequency range. It is not necessary to re-measure the out-of-band emissions as a part of this test. Record the frequencies and amplitudes corresponding to the measured emissions and capture the data plots. e) Repeat step b) through step d) for the upper spurious emission frequency range if not already captured by a wide span measurement performed as per the alternative provided in step a). The upper frequency for this measurement is defined in 5.1.1 as a function of the EUT

	operating range. f) Compare the results with the corresponding limit in the applicable regulation. g) The test report shall include the data plots of the measuring instrument display and the measured data.

5.1.5.1. E.U.T. Operation

Operating Environment:					
Temperature:	24.6 ° C	Humidity:	52.4 %	Atmospheric Pressure:	101.2 kPa
Pre test mode:	TM1/TM2/TM3				
Final test mode:	TM1/TM2/TM3				

5.1.5.2. Test Setup Diagram



5.1.5.3. Test Result

PASS

5.1.5.4. Test Data

Please Refer to Appendix LTE for Details.

5.1.6. Radiated Emission

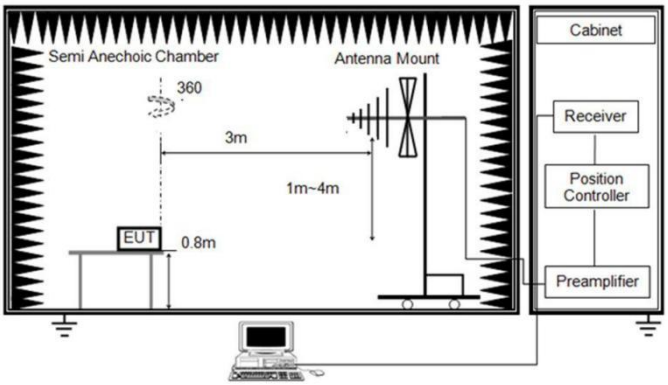
Test Requirement:	47 CFR Part 2.1053, Part 22.917(a)
Test Limit:	The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.
Test Method:	ANSI C63.26-2015, Section 5.5.3
Procedure:	a) Place the EUT in the center of the turntable. The EUT shall be configured to transmit into the standard non-radiating load (for measuring radiated spurious emissions), connected with cables of minimal length unless specified otherwise. If the EUT uses an adjustable antenna, the antenna shall be positioned to the length that produces the worst case emission at the fundamental operating frequency. b) Each emission under consideration shall be evaluated: 1) Raise and lower the measurement antenna in accordance 5.5.2, as necessary to enable detection of the maximum emission amplitude relative to measurement antenna height. 2) Rotate the EUT through 360° to determine the maximum emission level relative to the axial position. 3) Return the turntable to the azimuth where the highest emission amplitude level was observed. 4) Vary the measurement antenna height again through 1 m to 4 m again to find the height associated with the maximum emission amplitude. 5) Record the measured emission amplitude level and frequency using the appropriate RBW. c) Repeat step b) for each emission frequency with the measurement antenna oriented in both the horizontal and vertical polarizations to determine the orientation that gives the maximum emissions amplitude. d) Set-up the substitution measurement with the reference point of the substitution antenna located as near as possible to where the center of the EUT radiating element was located during the PASSial EUT measurement. e) Maintain the previous measurement instrument settings and test set-up, with the exception that the EUT is removed and replaced by the substitution antenna. f) Connect a signal generator to the substitution antenna; locate the signal generator so as to minimize any potential influences on the measurement results. Set the signal generator to the frequency where emissions are detected, and set an output power level such that the radiated signal can be detected by the measurement instrument, with sufficient dynamic range relative to the noise floor. g) For each emission that was detected and measured in the PASSial test [i.e., in step b) and step c)]: 1) Vary the measurement antenna height between 1 m to 4 m to maximize the received (measured) signal amplitude. 2) Adjust the signal generator output power level until the amplitude detected by the measurement instrument equals the amplitude level of the emission previously measured directly in step b) and step c). 3) Record the output power level of the signal generator when equivalence is

	achieved in step 2). h) Repeat step e) through step g) with the measurement antenna oriented in the opposite polarization. i) Calculate the emission power in dBm referenced to a half-wave dipole using the following equation: Pe = Ps(dBm) - cable loss (dB) + antenna gain (dBd) where Pe = equivalent emission power in dBm Ps = source (signal generator) power in dBm NOTE—dBd refers to the measured antenna gain in decibels relative to a half-wave dipole. j) Correct the antenna gain of the substitution antenna if necessary to reference the emission power to a half-wave dipole. When using measurement antennas with the gain specified in dBi, the equivalent dipole-referenced gain can be determined from: gain (dBd) = gain (dBi) - 2.15 dB. If necessary, the antenna gain can be calculated from calibrated antenna factor information k) Provide the complete measurement results as a part of the test report.

5.1.6.1. E.U.T. Operation

Operating Environment:					
Temperature:	23 °C	Humidity:	56.9 %	Atmospheric Pressure:	101 kPa
Pre test mode:	TM1/TM2/TM3				
Final test mode:	TM1/TM2/TM3				

5.1.6.2. Test Setup Diagram



Below 1 GHz and above 30 MHz

5.1.6.3. Test Result

Pass

Test Band: LTE Band 5, 1RB, QPSK

Freq. (MHz)	Reading (dBuV)	Ant. Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Factor (dB/m)	Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Polarity
Test channel:CHL										
2474.02	59.08	27.4	7.24	52.5	-17.86	41.22	82.25	-41.03	PK	H
4901.77	59.71	27.4	7.24	52.5	-17.86	41.85	82.25	-40.40	PK	H
2452.50	61.53	27.4	7.24	52.5	-17.86	43.67	82.25	-38.58	PK	V
4896.01	62.29	27.4	7.24	52.5	-17.86	44.43	82.25	-37.82	PK	V
Test channel:CHM										
2454.81	59.10	27.35	7.24	52.5	-17.91	41.19	82.25	-41.06	PK	H
4887.14	61.63	27.35	7.24	52.5	-17.91	43.72	82.25	-38.53	PK	H
2445.06	60.56	27.35	7.24	52.5	-17.91	42.65	82.25	-39.60	PK	V
4850.80	60.56	27.35	7.24	52.5	-17.91	42.65	82.25	-39.60	PK	V
Test channel:CHH										
2447.19	59.22	27.6	7.24	52.5	-17.66	41.56	82.25	-40.69	PK	H
4895.34	60.28	27.6	7.24	52.5	-17.66	42.62	82.25	-39.63	PK	H
2443.91	61.47	27.6	7.24	52.5	-17.66	43.81	82.25	-38.44	PK	V
4897.38	61.57	27.6	7.24	52.5	-17.66	43.91	82.25	-38.34	PK	V

Note:
Factor = Ant. Factor + Cable Factor - Pre-amplifier.
Level = Reading + Factor .
Margin = Level - Limit.

5.1.7. Frequency Stability

Test Requirement:	47 CFR Part 2.1055, Part 22.355
Test Limit:	+/- 2.5ppm
Test Method:	ANSI C63.26-2015, Section 5.6
Procedure:	Frequency stability over variations in temperature: a) Supply the EUT with a nominal 60 Hz ac voltage, dc voltage, or install a new or fully charged battery in the EUT. b) If possible a dummy load should be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, the EUT should be placed in the center of the chamber with the antenna adjusted to the shortest length possible. c) Turn on the EUT, and tune it to the center frequency of the operating band. d) Couple the transmitter output to the measuring instrument through a suitable attenuator and coaxial cable. If connection to the EUT output is not possible, make the measurement by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away). NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory authority is the recommended measuring instrument. e) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument, but is strong enough to allow measurement of the operating or fundamental frequency of the EUT). Adjust the detector bandwidth and span settings to achieve a resolution capable of accurate frequency measurements over the applicable frequency stability limits. f) Turn the EUT off, and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit. g) Set the temperature control on the chamber to the highest temperature specified in the regulatory requirements for the type of device, and allow the oscillator heater and the chamber temperature to stabilize. Unless otherwise instructed by the regulatory authority, this temperature should be 524.6 ° C. h) While maintaining a constant temperature inside the environmental chamber, turn on the EUT and allow sufficient time for the EUT temperature to stabilize. i) Measure the frequency. j) Switch off the EUT, but do not switch off the oscillator heater. k) Lower the chamber temperature to the next level that is required by the standard and allow the temperature inside the chamber to stabilize. Unless otherwise instructed by the regulators, this temperature step should be 124.6 ° C. l) Repeat step h) through step k) down to the lowest specified temperature. Unless otherwise instructed by the regulators, this temperature should be -324.6 ° C. When the frequency stability limit is stated as being sufficient such that the fundamental emissions stay within the authorized bands of operation, a reference point shall be established at the

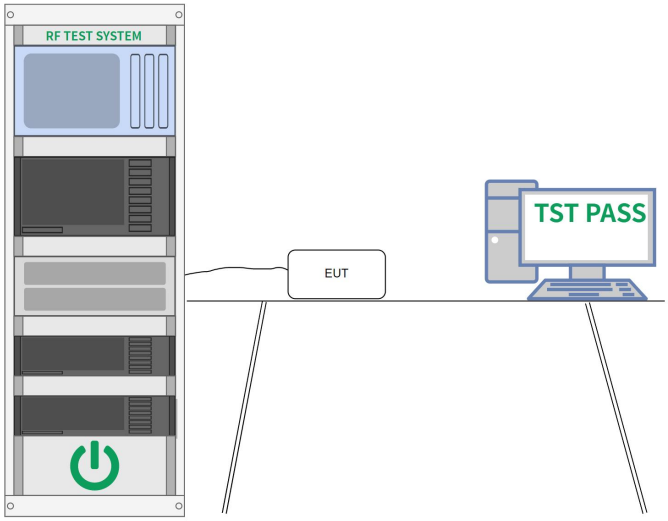
	applicable unwanted emissions limit using a RBW equal to the RBW required by the unwanted emissions specification of the applicable regulatory standard. These reference points measured using the lowest and highest channel of operation shall be identified as fL and fH respectively. The worst-case frequency offset determined in the above methods shall be added or subtracted from the values of fL and fH and the resulting frequencies must remain within the band. m) The following additional information is required for equipment incorporating heater type crystal oscillators to be used in mobile stations except for battery powered, hand carried, and portable equipment having mean output power lower than the threshold specified. 1) Measurement data showing variation in transmitter output frequency from a cold start and the elapsed time necessary for the frequency to stabilize within the applicable tolerance. Tests shall be made after temperature stabilization at each of the ambient temperature levels required by the standard. 2) Beginning at each temperature level specified, the frequency shall be measured within 60 s after application of primary power to the transmitter and at intervals of no more than 60 s thereafter until 10 min have elapsed or until sufficient measurements are obtained to indicate clearly that the frequency has stabilized within the applicable tolerance, whichever time period is greater. 3) The elapsed time necessary for the frequency to stabilize within the applicable tolerance from each beginning temperature level as determined from the tests specified in this paragraph shall be specified in the instruction book for the transmitter furnished to the user. 4) When it is impracticable to subject the complete transmitter to this test because of its physical dimensions or power rating, only its frequency determining and stabilizing portions need be tested. Frequency stability when varying supply voltage: a) Couple the transmitter output to the measuring instrument through a suitable attenuator and coaxial cable. If connection to the EUT output is not possible make the measurement by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away) b) Supply the EUT with nominal ac or dc voltage. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided. Effects on frequency of transmitter keying (except for broadcast transmitters) and any heating element cycling at the nominal supply voltage and at each extreme also shall be shown. c) Turn on the EUT, and couple its output to a frequency counter or other frequency-measuring instrument. d) Tune the EUT to the center frequency of the operating band. Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a

	suitable signal level (i.e., a level that will not overload the measurement instrument, but is strong enough to allow measurement of the operating or fundamental frequency of the EUT). Adjust the detector bandwidth and span settings to achieve a resolution capable of accurate frequency measurements over the applicable frequency stability limits. NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory authority is the recommended measuring instrument. e) Measure the frequency. f) Unless otherwise specified, vary primary supply voltage from 85% to 115% of the nominal value for other than hand carried battery equipment. g) For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer. h) Repeat the frequency measurement. NOTE—For band-edge compliance, it can be required to make these measurements at the low and high channel of the operating band.

5.1.7.1. E.U.T. Operation

Operating Environment:					
Temperature:	24.6 ° C	Humidity:	52.4 %	Atmospheric Pressure:	101.2 kPa
Pre test mode:	TM1/TM2/TM3				
Final test mode:	TM1/TM2/TM3				

5.1.7.2. Test Setup Diagram



5.1.7.3. Test Result

PASS

5.1.7.4. Test Data

Please Refer to Appendix LTE for Details.

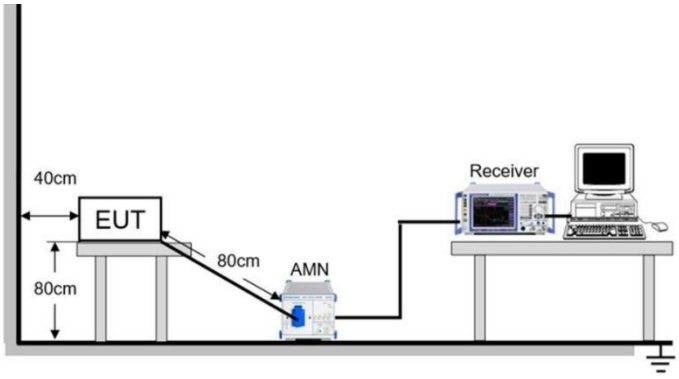
5.1.8. Conducted Emission at AC power line

Test Requirement:	Refer to 47 CFR 15.207(a), Except as shown in paragraphs (b)and (c)of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN).
Test Limit:	Frequency of emission (MHz) / Conducted limit (dBμV): Quasi-peak / Average 0.15-0.5: 66 to 56* / 56 to 46* 0.5-5: 56 / 46 5-30: 60 / 50 *Decreases with the logarithm of the frequency.
Test Method:	ANSI C63.10-2020 section 6.2
Procedure:	1. The EUT was setup according to ANSI C63.10 requirements. 2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. 3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. 4. The peripheral devices are also connected to the main power through a LISN. (Refer to the block diagram of the test setup and photographs) 5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source. 6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length. 7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz. 8. During the above scans, the emissions were maximized by cable manipulation.

5.1.8.1. E.U.T. Operation

Operating Environment:					
Temperature:	22.2 °C	Humidity:	55.5 %	Atmospheric Pressure:	103 kPa
Pre test mode:	TM1/TM2/TM3/TM4				
Final test mode:	TM1/TM2/TM3/TM4				

5.1.8.2. Test Setup Diagram



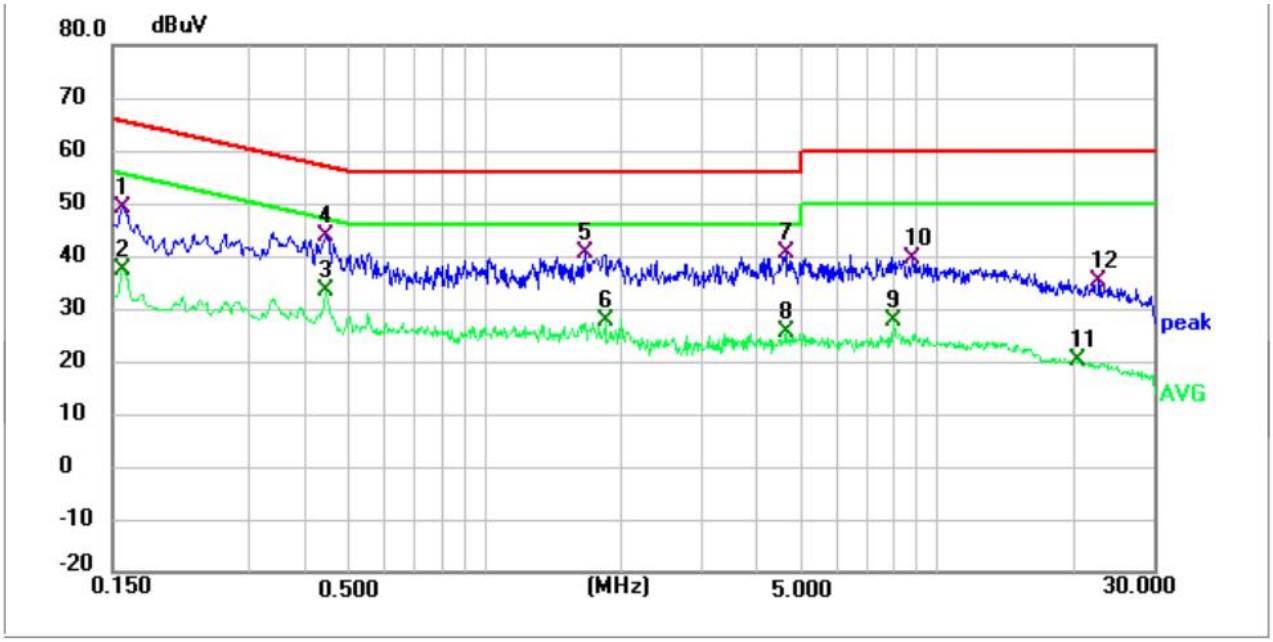
5.1.8.3. Test Result

PASS

5.1.8.4. Test Data

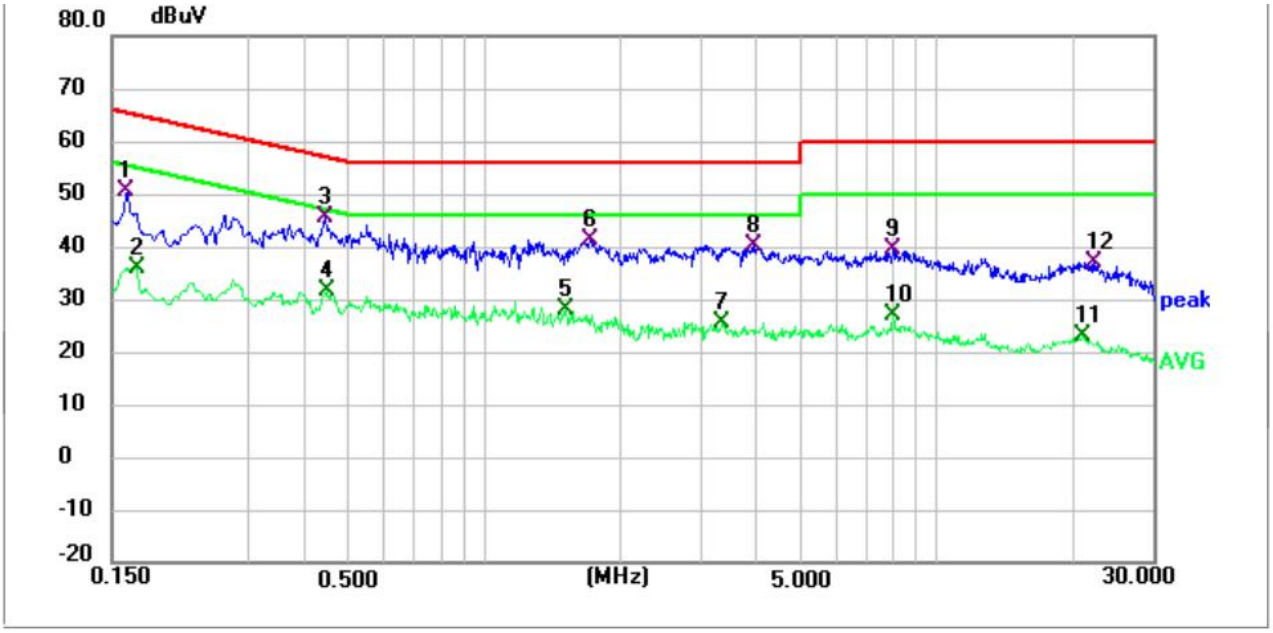
Note:
Have pre-scan all test mode, found TM4 mode which it was worst case, so only show the worst case's data on this report.

Mode4 / Line: Line



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.158	38.99	10.27	49.26	65.57	-16.31	QP
2	0.158	27.12	10.27	37.39	55.57	-18.18	AVG
3	0.442	23.18	10.27	33.45	47.02	-13.57	AVG
4 *	0.444	33.35	10.27	43.62	56.99	-13.37	QP
5	1.670	29.82	10.55	40.37	56.00	-15.63	QP
6	1.842	17.03	10.60	27.63	46.00	-18.37	AVG
7	4.626	29.08	11.52	40.60	56.00	-15.40	QP
8	4.626	13.94	11.52	25.46	46.00	-20.54	AVG
9	7.998	14.91	12.92	27.83	50.00	-22.17	AVG
10	8.802	26.39	13.14	39.53	60.00	-20.47	QP
11	20.282	4.83	15.26	20.09	50.00	-29.91	AVG
12	22.658	20.26	15.05	35.31	60.00	-24.69	QP

Mode4 / Line: Neutral

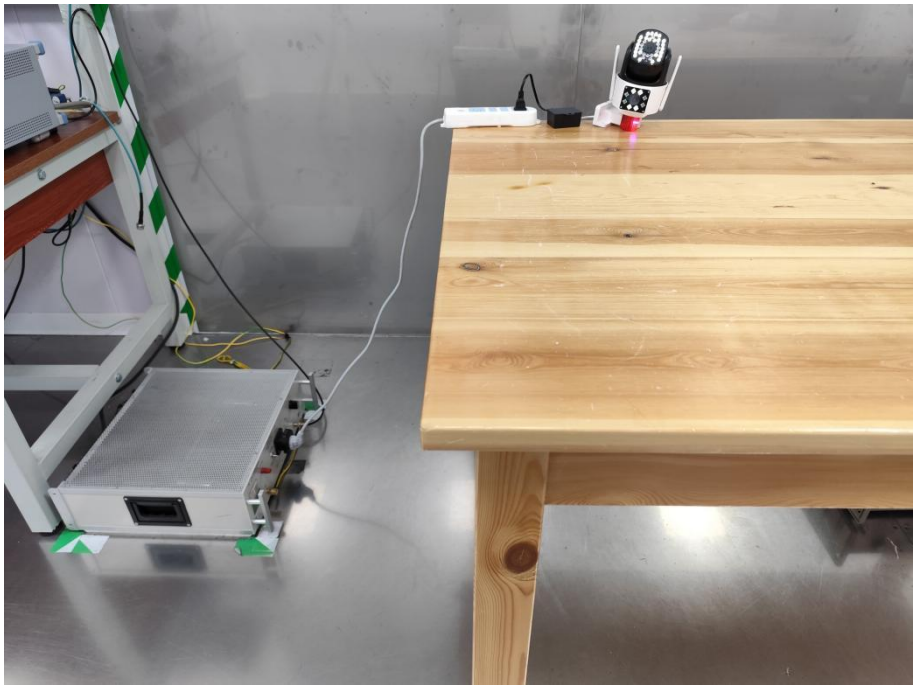


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.162	40.27	10.28	50.55	65.36	-14.81	QP
2	0.170	25.75	10.27	36.02	54.96	-18.94	AVG
3 *	0.442	35.10	10.29	45.39	57.02	-11.63	QP
4	0.446	21.33	10.29	31.62	46.95	-15.33	AVG
5	1.514	17.46	10.51	27.97	46.00	-18.03	AVG
6	1.710	30.86	10.56	41.42	56.00	-14.58	QP
7	3.350	14.57	11.04	25.61	46.00	-20.39	AVG
8	3.926	28.77	11.27	40.04	56.00	-15.96	QP
9	7.998	26.65	12.94	39.59	60.00	-20.41	QP
10	7.998	13.91	12.94	26.85	50.00	-23.15	AVG
11	21.086	7.54	15.56	23.10	50.00	-26.90	AVG
12	22.282	21.67	15.41	37.08	60.00	-22.92	QP

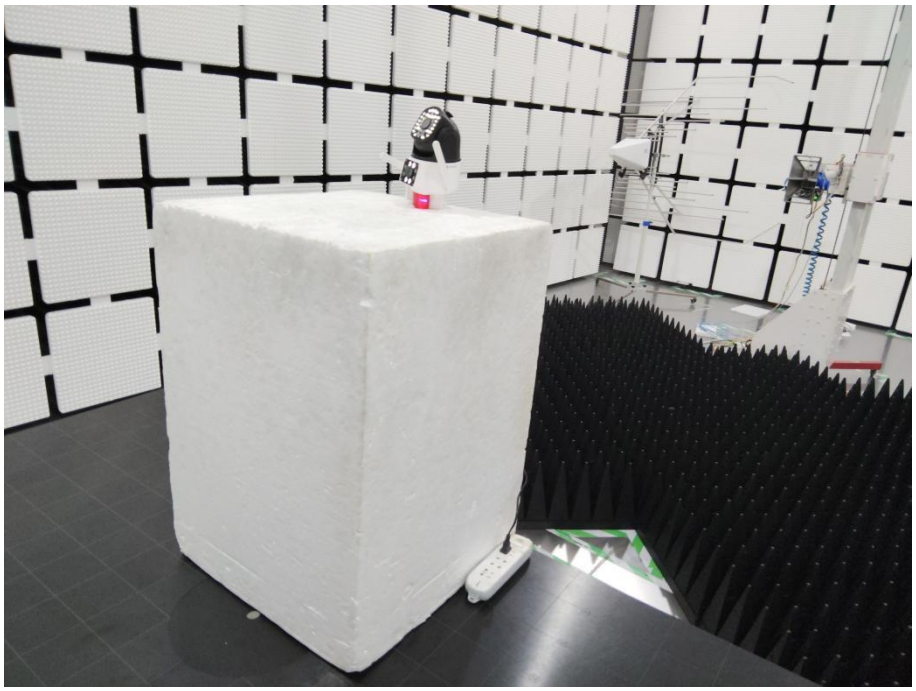
Note:
1). Result = Reading +Correct (Insertion Loss + Cable Loss + Attenuator Factor)
2). Margin = Result - Limit

6. TEST SETUP PHOTOS

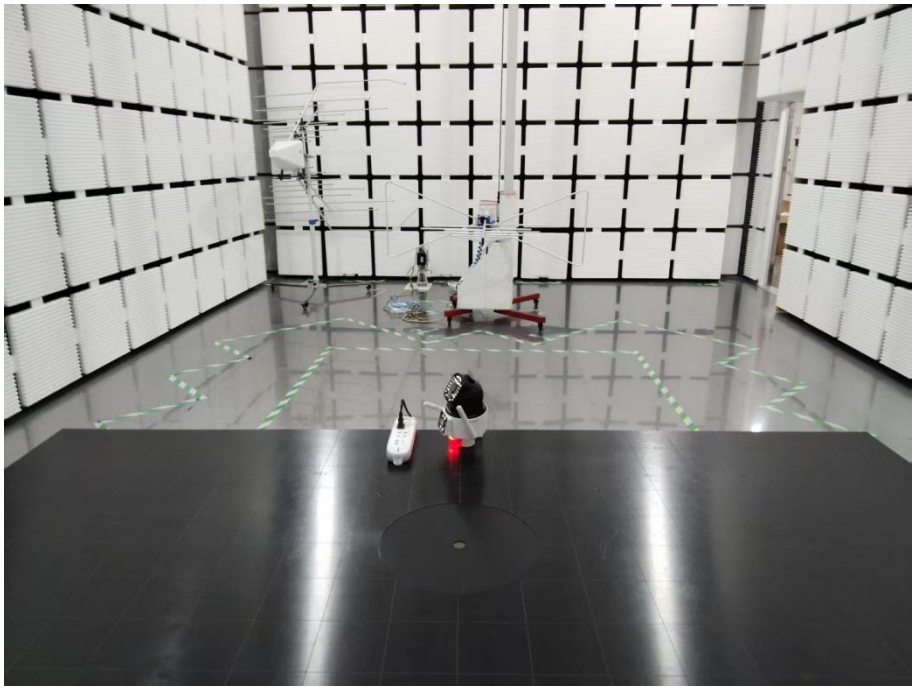
Conducted Emission at AC power line



Radiated band edge emission
Radiated Spurious Emission (Above 1GHz)

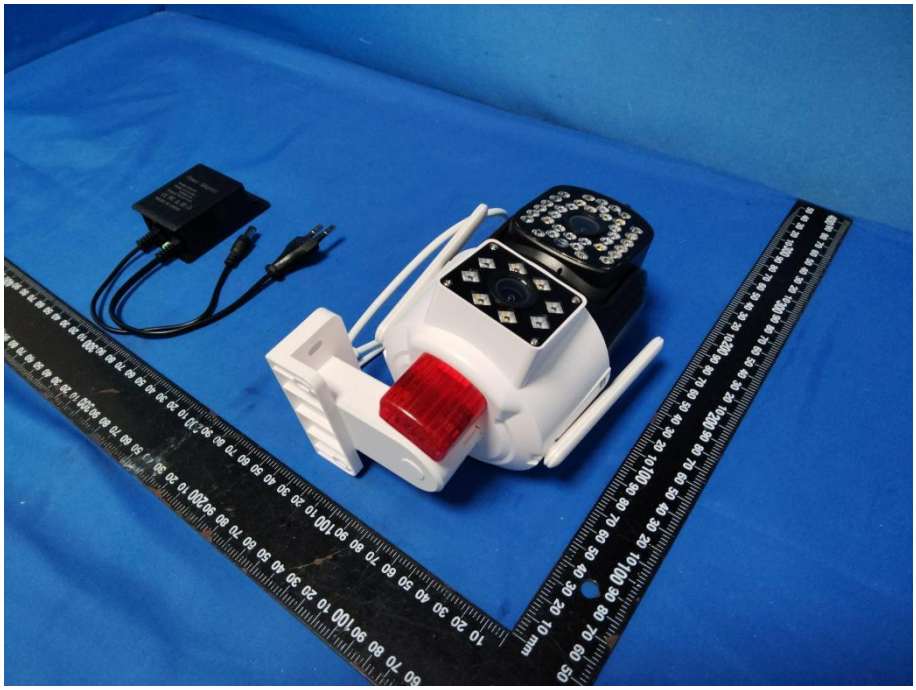


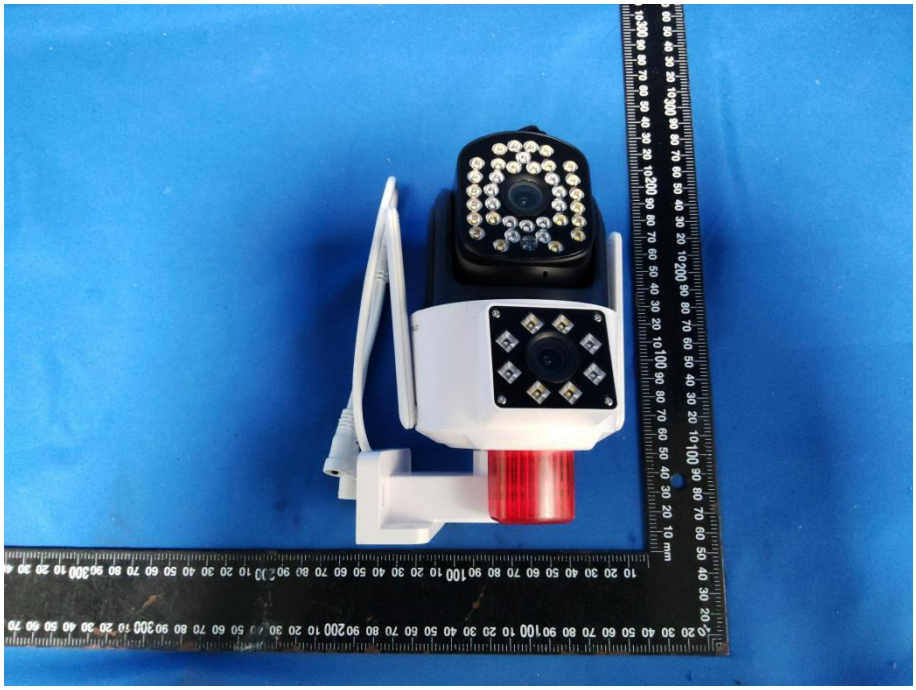
Radiated Spurious Emission (below 1GHz)

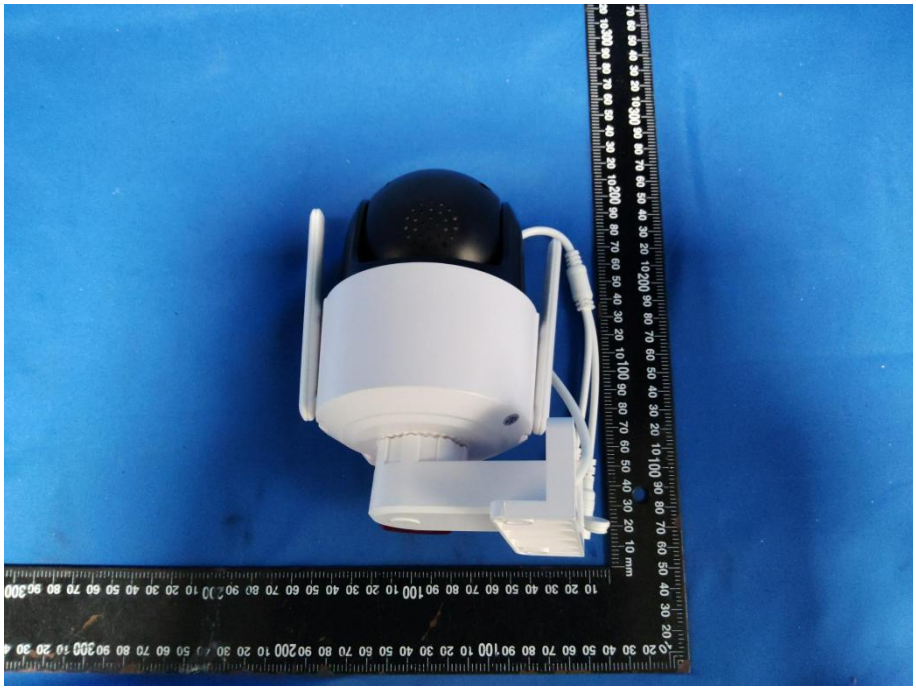


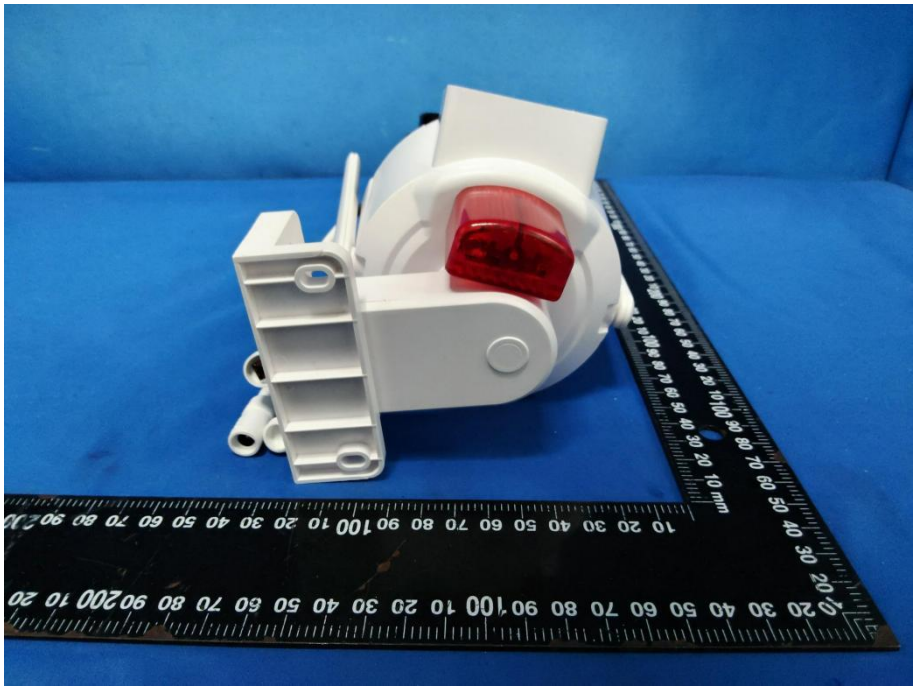
7. EXTERNAL AND INTERNAL PHOTOS

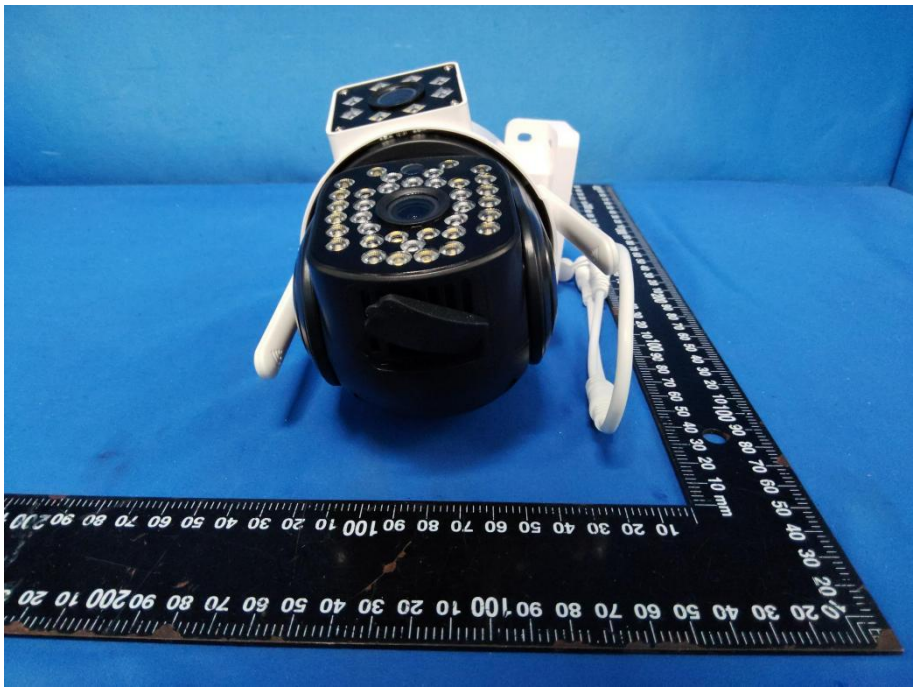
7.1. External Photos

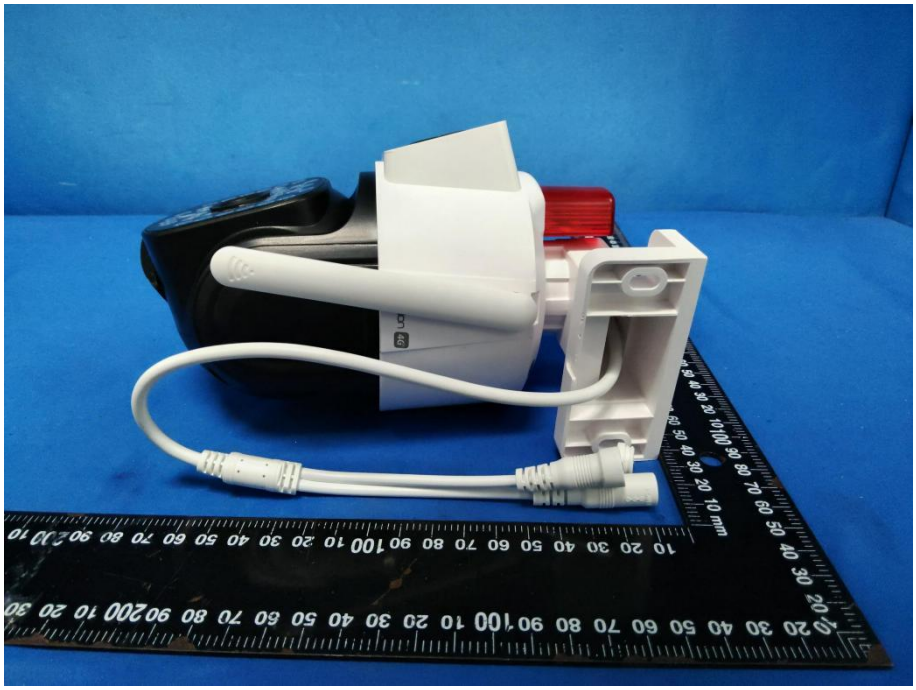




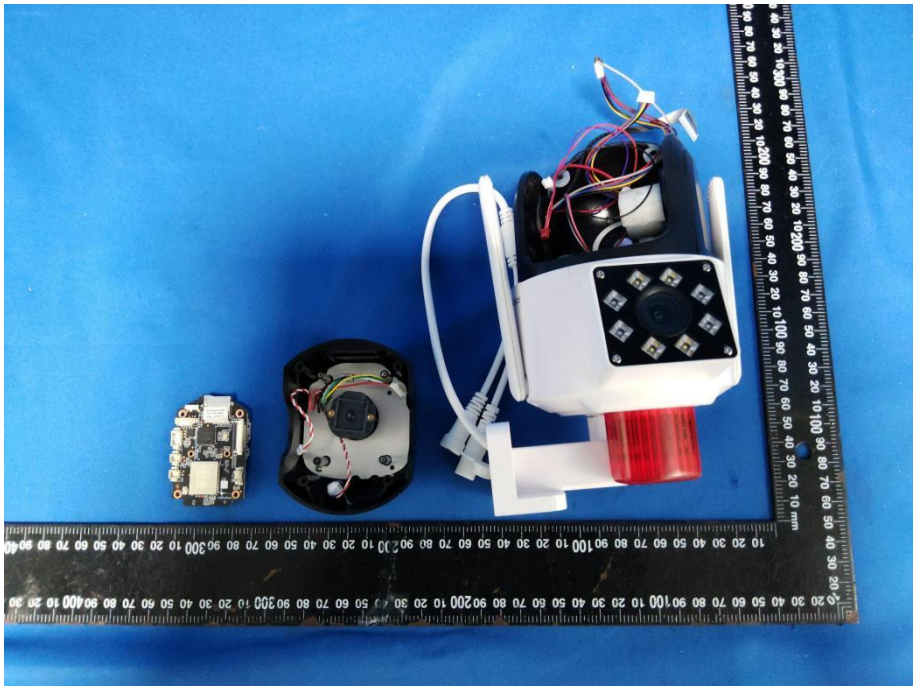


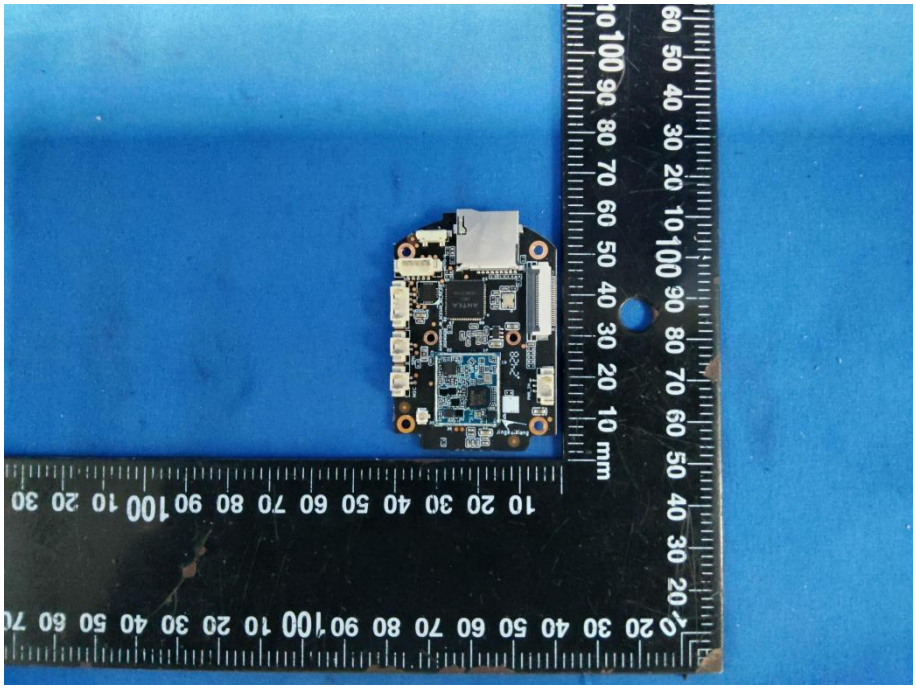


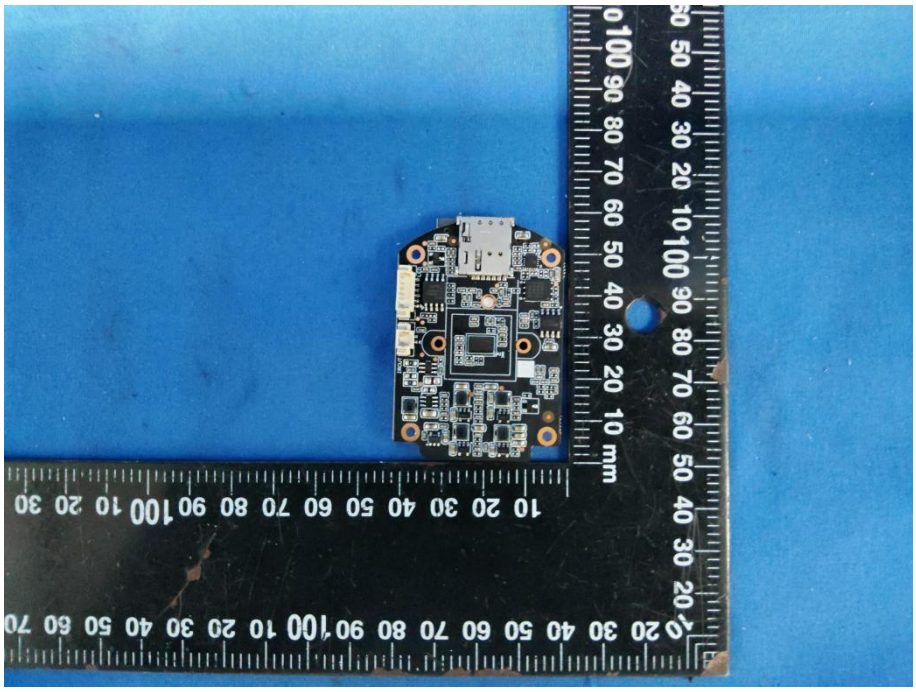


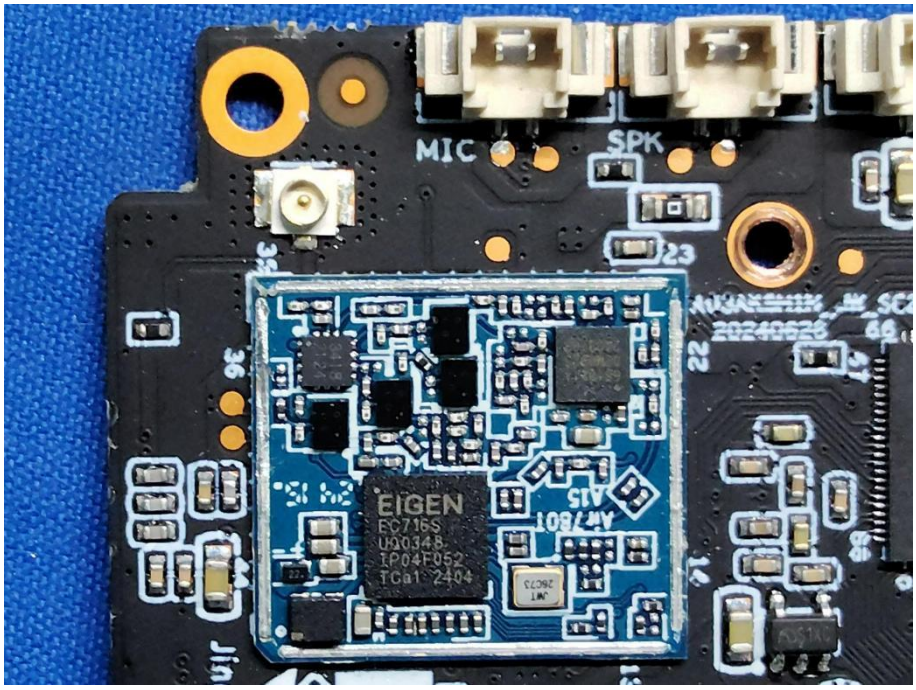


7.2. Internal Photos





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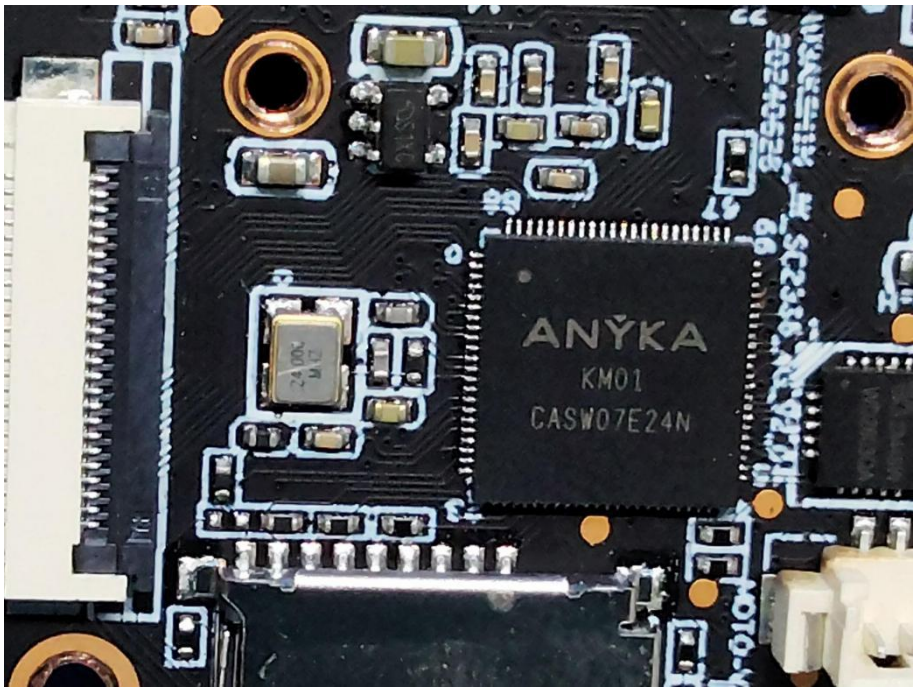
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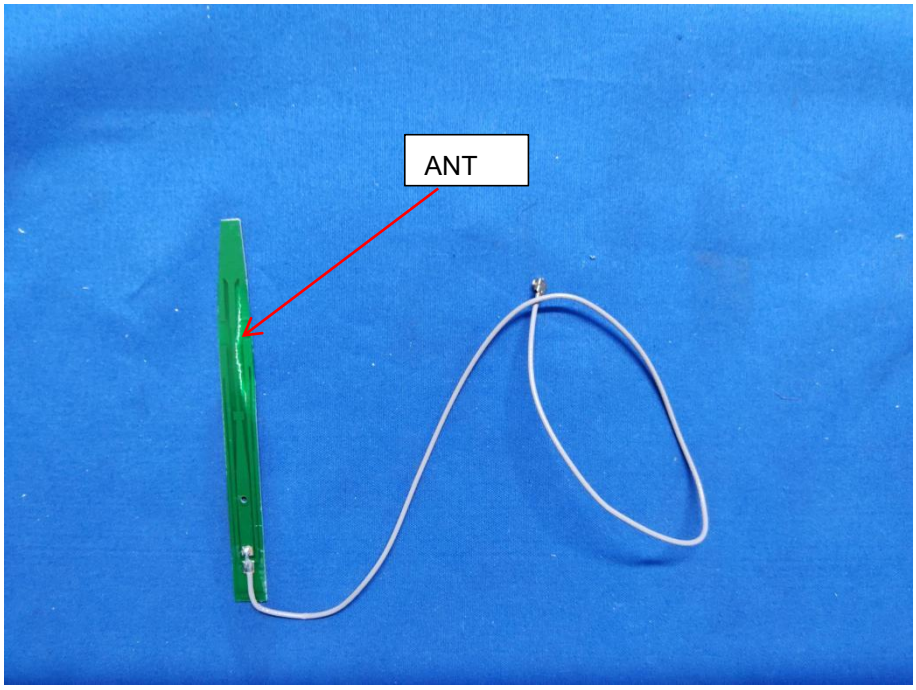
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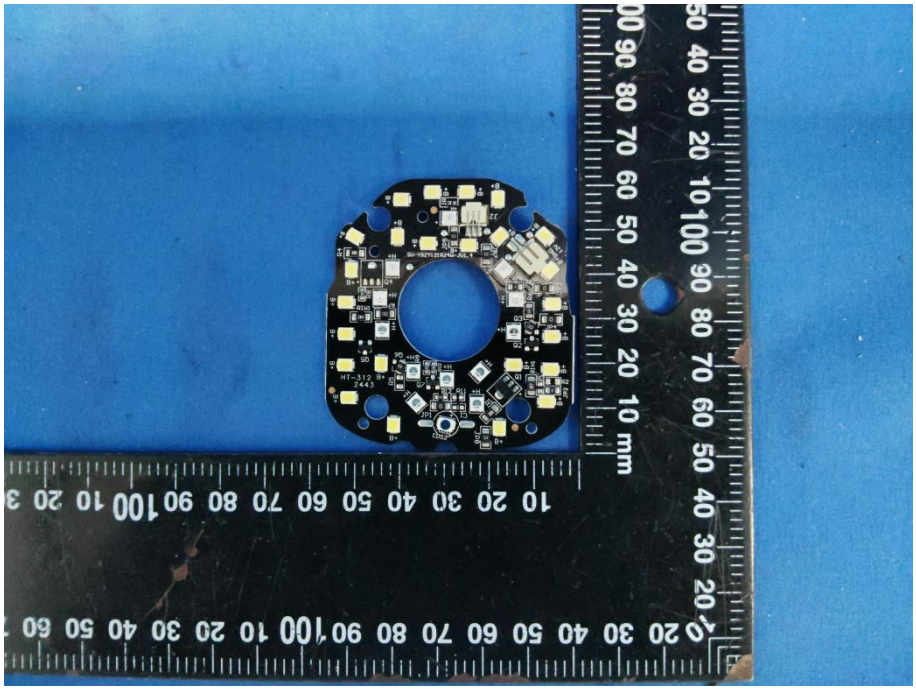

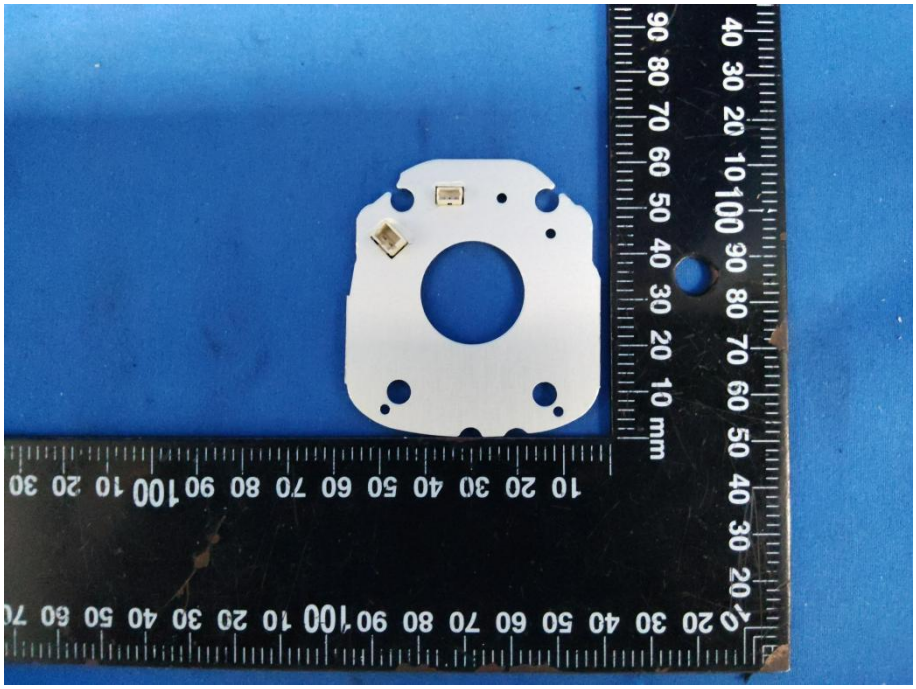

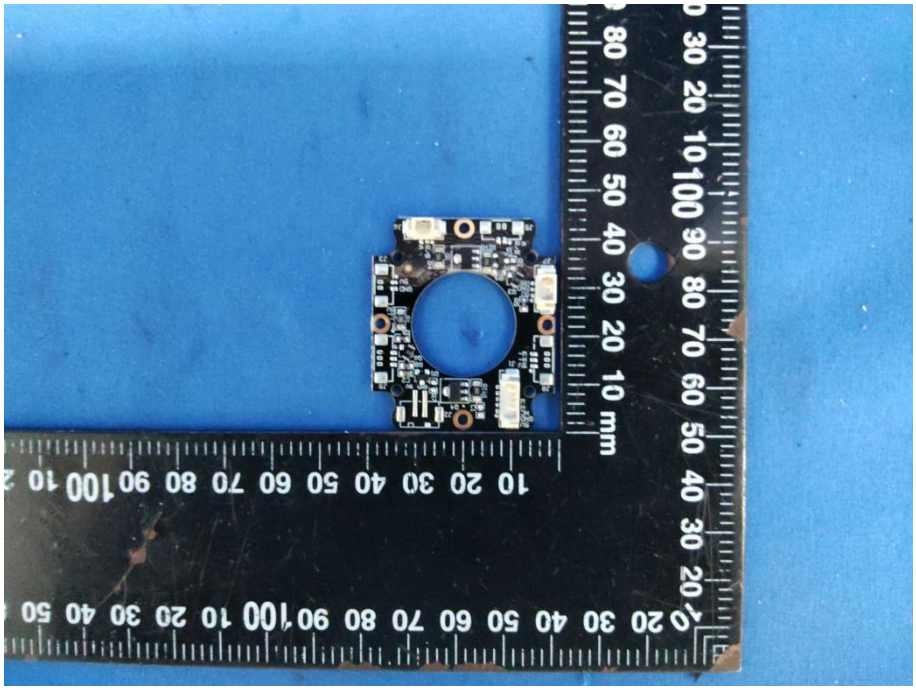

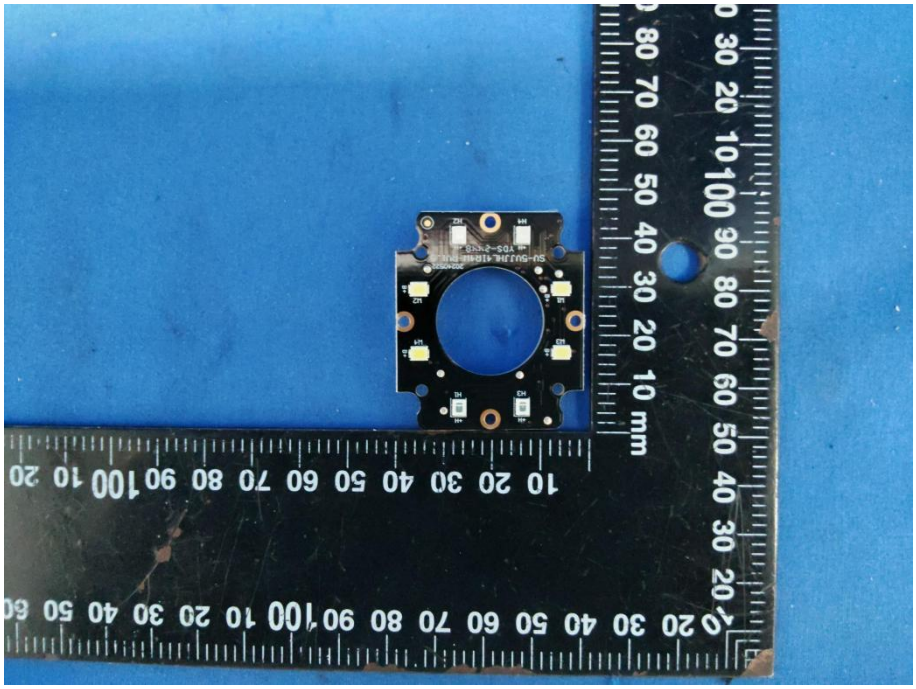

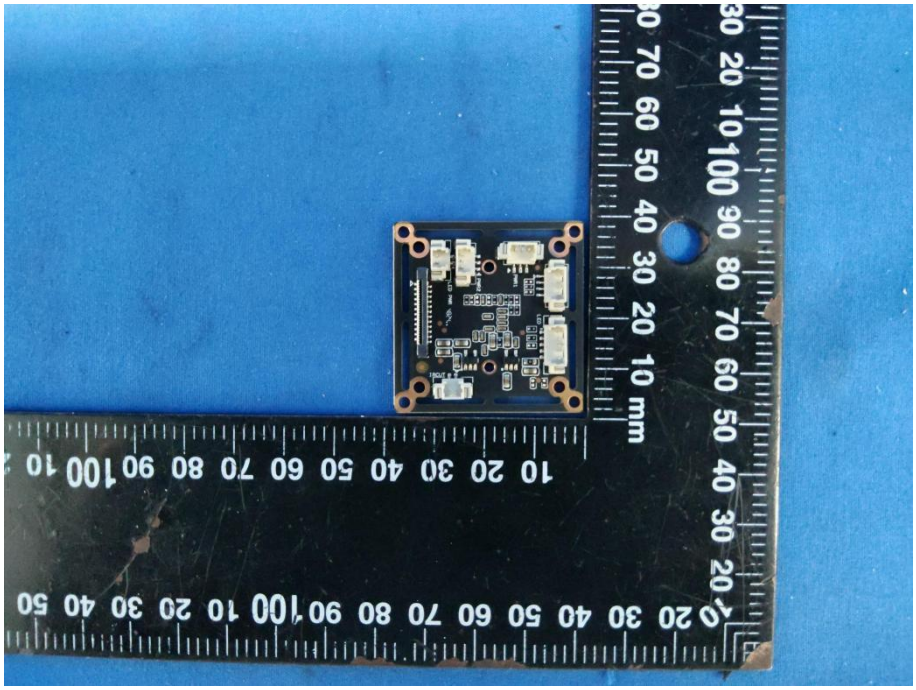

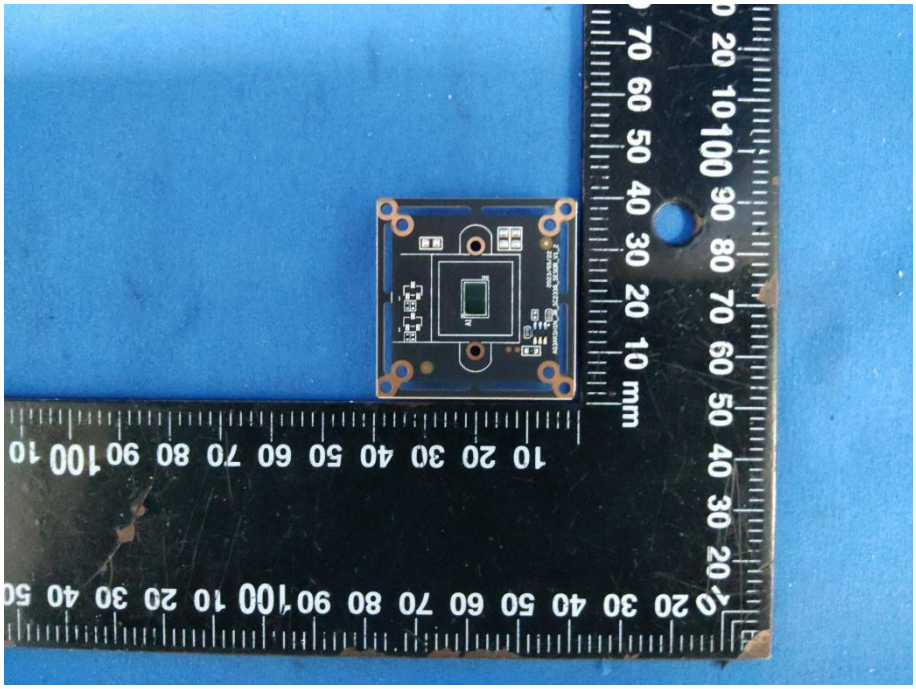

------End of the report-----