



FCC RF Test Report

(2.4G Wi-Fi)

Applicant: Realsee(Beijing) Technology Co., Ltd.

Address of Applicant: Room 7-261, 7th Floor, Building 1, No. 158, Xisihuan North Road, Haidian District, Beijing City, P. R. China

Equipment Under Test (EUT)

Product Name: 3D SMART CAMERA

Model No.: RS42050, RS42025

Trade Mark: REALSEE

FCC ID: 2A67J-RS42050

Applicable Standards: FCC CFR Title 47 Part 15C (§15.247)

Date of Sample Receipt: 13 Sep., 2022

Date of Test: 14 Sep., to 16 Oct., 2022

Date of Report Issued: 28 Mar., 2023

Test Result: PASS

Tested by: Mike DU **Date:** 28 Mar., 2023

Reviewed by: Wenwen Zhang **Date:** 28 Mar., 2023

Approved by: Manager **Date:** 28 Mar., 2023

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in above the application standard version. Test results reported herein relate only to the item(s) tested.

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1 Version

Version No.	Date	Description
00	28 Mar., 2023	Original

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3 General Information

3.1 Client Information

Applicant:	Realsee(Beijing) Technology Co., Ltd.
Address:	Room 7-261, 7th Floor, Building 1, No. 158, Xisihuan North Road, Haidian District, Beijing City, P. R. China
Manufacturer:	Realsee(Beijing) Technology Co., Ltd.
Address:	Room 7-261, 7th Floor, Building 1, No. 158, Xisihuan North Road, Haidian District, Beijing City, P. R. China
Factory:	Hong Fu Tai Precision Electrons (Yantai) Co., Ltd.
Address:	No. 8 Jiaying Road, Yantai Economic & Technological Development Area, Shandong, P.R. China

3.2 General Description of E.U.T.

Product Name:	3D SMART CAMERA
Model No.:	RS42050, RS42025
Operation Frequency:	2412 MHz - 2462 MHz (802.11b, g, n-HT20) 2422 MHz - 2452 MHz (802.11n-HT40)
Channel Numbers:	11 (802.11b, g, n-HT20) 7 (802.11n-HT40)
Channel Separation:	5MHz
Modulation Technology: (IEEE 802.11b)	DSSS-DBPSK, DQPSK, CCK
Modulation Technology: (IEEE 802.11g/802.11n)	OFDM-BPSK, QPSK, 16QAM, 64QAM
Antenna Type:	FPC Antenna
Antenna Gain:	ANT1: 0.91 dBi , ANT2: 1.37 dBi , Direction gain for MIMO mode: 4.15dBi.
Antenna Transmit Mode:	MIMO (2TX, 2RX)
Power Supply:	Rechargeable Li-ion Battery DC14.4V, 6400mAh
AC Adapter:	Model: ADP-65SD B Input: AC100-240V, 50/60Hz, 1.5A Output: DC 20V $\approx$ 3.25A or 15V $\approx$ 3A or 9V $\approx$ 3A or 5V $\approx$ 3A
Remark:	Model No.: RS42050, RS42025 were identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being the detection range of LIDAR.
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

3.3 Test Mode and Environment

Test Mode:	
Transmitting mode:	Keep the EUT in continuous transmitting with modulation
Per-scan all kind of data rate, the follow list were the worst case:	
Mode	Data rate
802.11b	1Mbps
802.11g	6Mbps
802.11n-HT20	6.5Mbps
802.11n-HT40	13.5Mbps
Remark:	
- For AC power line conducted emission and radiated spurious emission (below 1GHz), pre-scan 802.11b, g, n modulation mode, found 802.11b modulation mode was worse case mode. The report only reflects the test data of worst mode. - Channel Low, Mid and High for each type band with rated data rate were chosen for full testing. The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for these modes. Just the worst case position (H mode) shown in report.	
Operating Environment:	
Temperature:	15°C ~ 35°C
Humidity:	20 % ~ 75 % RH
Atmospheric Pressure:	1008 mbar

3.4 Description of Test Auxiliary Equipment

The EUT has been tested as an independent unit.

3.5 Measurement Uncertainty

Please refer to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765.

3.6 Additions to, Deviations, or Exclusions from the Method

No

3.7 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations: ● FCC - Designation No.: CN1211 JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551. ● ISED – CAB identifier.: CN0021 The 3m Semi-anechoic chamber and 10m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1. ● CNAS - Registration No.: CNAS L15527 JianYan Testing Group Shenzhen Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L15527. ● A2LA - Registration No.: 4346.01 This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf
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3.8 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd. Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China. Tel: +86-755-23118282, Fax: +86-755-23116366 Email: info-JYTee@lets.com, Website: http://jyt.lets.com

3.9 Test Instruments List

Please refer to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765.

4 Measurement Setup and Procedure

4.1 Test Channel

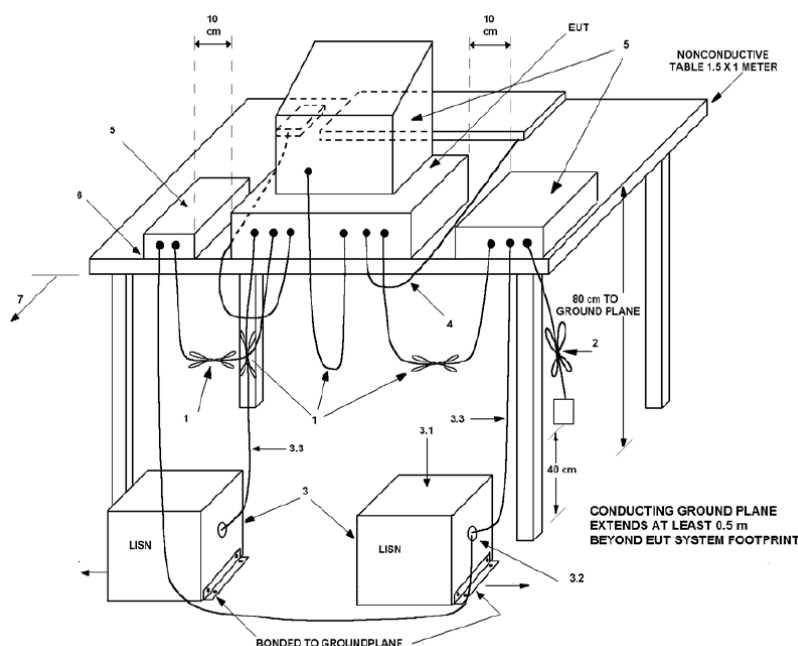
According to ANSI C63.10-2013 chapter 5.6.1 Table 4 requirement, select lowest channel, middle channel, and highest channel in the frequency range in which device operates for testing. The detailed frequency points are as follows:

802.11b, 802.11g, 802.11n-HT20					
Lowest channel		Middle channel		Highest channel	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	2412	6	2437	11	2462

802.11n-HT40					
Lowest channel		Middle channel		Highest channel	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
3	2422	6	2437	9	2452

4.2 Test Setup

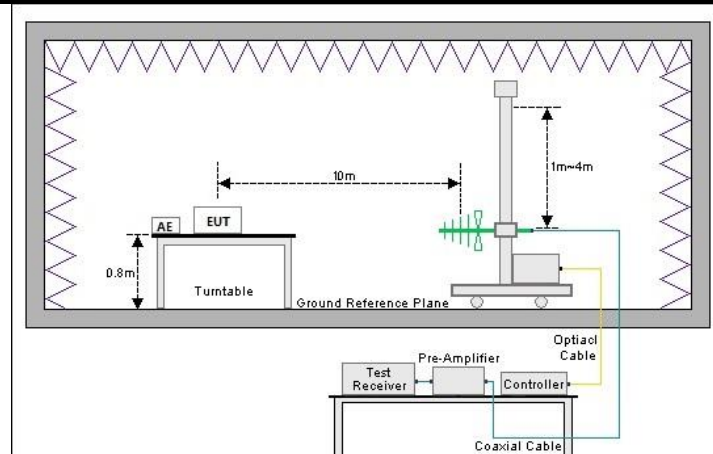
1) Conducted emission measurement:



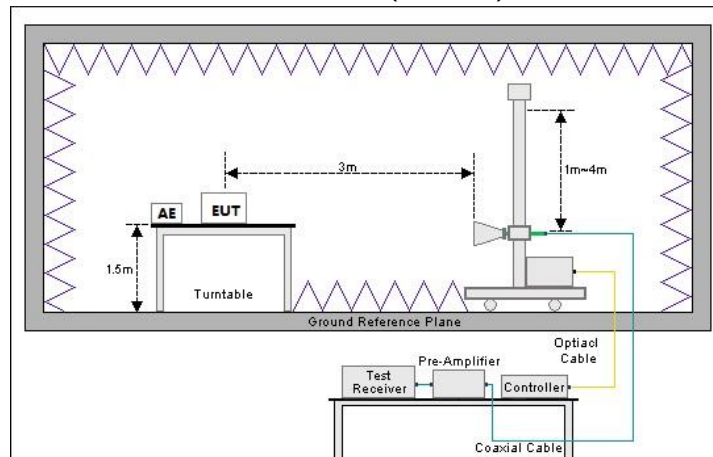
Note: The detailed descriptions please refer to Figure 8 of ANSI C63.4:2014.

2) Radiated emission measurement:

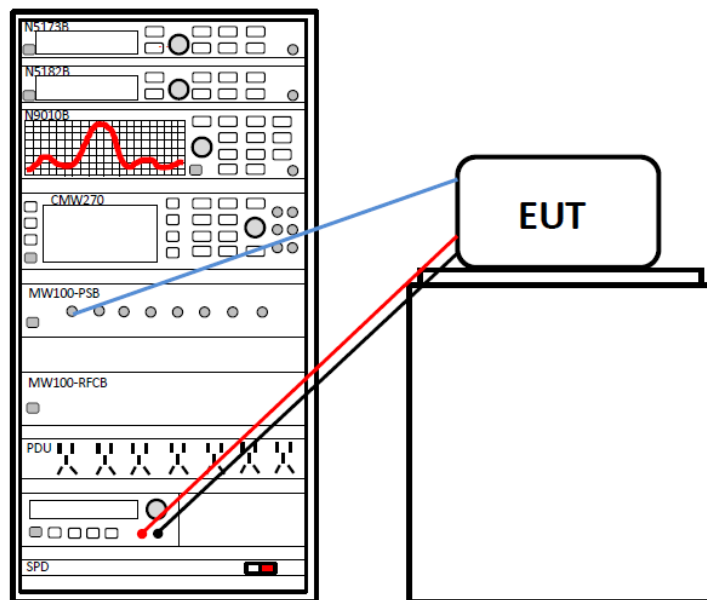
Below 1GHz (10m SAC)



Above 1GHz (3m SAC)



3) Conducted test method



4.3 Test Procedure

Test method	Test step
Conducted emission	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.
Radiated emission	For below 1GHz: 1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 10 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 10 m. 2. EUT works in each mode of operation that needs to be tested , and having the EUT continuously working, respectively on 3 axis (X, Y & Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations. 3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data. For above 1GHz: 1. The EUT was placed on the tabletop of a rotating table 1.5 m the ground at a 3 m fully anechoic room. The measurement distance from the EUT to the receiving antenna is 3 m. 2. EUT works in each mode of operation that needs to be tested , and having the EUT continuously working, respectively on 3 axis (X, Y & Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations. 3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.
Conducted test method	1. The Wi-Fi antenna port of EUT was connected to the test port of the test system through an RF cable. 2. The EUT is keeping in continuous transmission mode and tested in all modulation modes. 3. Open the test software, prepare a test plan, and control the system through the software. After the test is completed, the test report is exported through the test software.

5 Test Results

5.1 Summary

5.1.1 Clause and Data Summary

This report is revised according to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765 issued by JianYan Testing Group Shenzhen Co., Ltd, follow the Change ID allow change principle. Differences: Update addresses of applicant and applicant, and update addresses of manufacturer and manufacturer, update product name and model and FCC ID, so no need to retest.

Test items	Standard clause	Test data	Result
Antenna Requirement	15.203 15.247 (b)(4)	Please refer to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765.	Please refer to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765.
AC Power Line Conducted Emission	15.207	Please refer to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765.	Please refer to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765.
Duty Cycle	ANSI C63.10-2013	Please refer to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765.	Please refer to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765.
Conducted Output Power	15.247 (b)(3)	Please refer to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765.	Please refer to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765.
6dB Emission Bandwidth 99% Occupied Bandwidth	15.247 (a)(2)	Please refer to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765.	Please refer to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765.
Power Spectral Density	15.247 (e)	Please refer to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765.	Please refer to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765.
Band-edge Emission Conduction Spurious Emission	15.247 (d)	Please refer to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765.	Please refer to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765.
Emissions in Restricted Frequency Bands	15.205 15.247 (d)	Please refer to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765.	Please refer to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765.
Emissions in Non-restricted Frequency Bands	15.209 15.247(d)	Please refer to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765.	Please refer to FCC ID: 2A26V-RS41010, report No.: JYTSZ-R12-2201765.
Remark: 1. Please refer to report JYTSZ-R12-2201765, FCC ID: 2A26V-RS41010 issue by JianYan Testing Group Shenzhen Co., Ltd.			
Test Method:	ANSI C63.10-2013 KDB 558074 D01 15.247 Meas Guidance v05r02		

5.1.2 Test Limit

Test items	Limit																														
AC Power Line Conducted Emission	<table><tr><th rowspan="2">Frequency (MHz)</th><th colspan="2">Limit (dBµV)</th></tr><tr><th>Quasi-Peak</th><th>Average</th></tr><tr><td>0.15 – 0.5</td><td>66 to 56 Note 1</td><td>56 to 46 Note 1</td></tr><tr><td>0.5 – 5</td><td>56</td><td>46</td></tr><tr><td>5 – 30</td><td>60</td><td>50</td></tr></table> Note 1: The limit level in dBµV decreases linearly with the logarithm of frequency. Note 2: The more stringent limit applies at transition frequencies.	Frequency (MHz)	Limit (dBµV)		Quasi-Peak	Average	0.15 – 0.5	66 to 56 Note 1	56 to 46 Note 1	0.5 – 5	56	46	5 – 30	60	50																
Frequency (MHz)	Limit (dBµV)																														
	Quasi-Peak	Average																													
0.15 – 0.5	66 to 56 Note 1	56 to 46 Note 1																													
0.5 – 5	56	46																													
5 – 30	60	50																													
Conducted Output Power	For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt.																														
6dB Emission Bandwidth	The minimum 6 dB bandwidth shall be at least 500 kHz.																														
99% Occupied Bandwidth	N/A																														
Power Spectral Density	For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.																														
Band-edge Emission Conduction Spurious Emission	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).																														
Emissions in Restricted Frequency Bands Emissions in Non-restricted Frequency Bands	<table><tr><th rowspan="2">Frequency (MHz)</th><th colspan="2">Limit (dBµV/m)</th><th rowspan="2">Detector</th></tr><tr><th>@ 3m</th><th>@ 10m</th></tr><tr><td>30 – 88</td><td>40.0</td><td>30.0</td><td>Quasi-peak</td></tr><tr><td>88 – 216</td><td>43.5</td><td>33.5</td><td>Quasi-peak</td></tr><tr><td>216 – 960</td><td>46.0</td><td>36.0</td><td>Quasi-peak</td></tr><tr><td>960 – 1000</td><td>54.0</td><td>44.0</td><td>Quasi-peak</td></tr></table> Note: The more stringent limit applies at transition frequencies. <table><tr><th rowspan="2">Frequency</th><th colspan="2">Limit (dBµV/m) @ 3m</th></tr><tr><th>Average</th><th>Peake</th></tr><tr><td>Above 1 GHz</td><td>54.0</td><td>74.0</td></tr></table> Note: The measurement bandwidth shall be 1 MHz or greater.	Frequency (MHz)	Limit (dBµV/m)		Detector	@ 3m	@ 10m	30 – 88	40.0	30.0	Quasi-peak	88 – 216	43.5	33.5	Quasi-peak	216 – 960	46.0	36.0	Quasi-peak	960 – 1000	54.0	44.0	Quasi-peak	Frequency	Limit (dBµV/m) @ 3m		Average	Peake	Above 1 GHz	54.0	74.0
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-----End of report-----