FCC Test Report

Product Name	AI Camera
Model No.	AICAMX2
FCC ID.	2ACQ9-16880002

Applicant	altek Corporation
Address	No.12, Li-Hsin Road, Science-based Industrial Park,
	Hsin-Chu City, Taiwan

Date of Receipt	Mar. 12, 2019
Issued Date	Apr. 19, 2019
Report No.	1930148R-RFUSP01V00
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

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Test Report

Issued Date: Apr. 19, 2019 Report No.: 1930148R-RFUSP01V00

DEKRA

Product Name	AI Camera	
Applicant	altek Corporation	
Address	No.12, Li-Hsin Road, Science-based Industrial Park, Hsin-Chu City, Taiwan	
Manufacturer	Altek (Kunshan) Co., Ltd.	
Model No.	AICAMX2	
FCC ID.	2ACQ9-16880002	
EUT Rated Voltage	DC 3.8V by Battery or DC 5V by USB	
EUT Test Voltage	DC 5V by USB	
Trade Name	Altek	
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2016	
	ANSI C63.4: 2014, ANSI C63.10: 2013	
	KDB 558074 D01 15.247 Meas Guidance v05	
Test Result	Complied	

Documented By :

April Chen

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Tested By

:

Yun Che Chen

(Engineer / Yunche Chen)

Approved By :

(Director / Vincent Lin)



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DEKRA

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Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs



1. GENERAL INFORMATION

1.1. EUT Description

Product Name	AI Camera	
Trade Name	Altek	
Model No.	AICAMX2	
FCC ID.	2ACQ9-16880002	
Frequency Range	2402-2480MHz	
Channel Number	79	
Type of Modulation	FHSS: GFSK(1Mbps) / π /4DQPSK(2Mbps) / 8DPSK(3Mbps)	
Antenna Type	PIFA Antenna	
Channel Control	Auto	
Antenna Gain	Refer to the table "Antenna List"	

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	INPAQ	WAG-F-LB-00-030	PIFA	3.01dBi For 2.4GHz

Note:

1. The antenna of EUT conforms to FCC 15.203.

Center Frequency of Each Channel:

-	•						
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00:	2402 MHz	Channel 20:	2422 MHz	Channel 40:	2442 MHz	Channel 60:	2462 MHz
Channel 01:	2403 MHz	Channel 21:	2423 MHz	Channel 41:	2443 MHz	Channel 61:	2463 MHz
Channel 02:	2404 MHz	Channel 22:	2424 MHz	Channel 42:	2444 MHz	Channel 62:	2464 MHz
Channel 03:	2405 MHz	Channel 23:	2425 MHz	Channel 43:	2445 MHz	Channel 63:	2465 MHz
Channel 04:	2406 MHz	Channel 24:	2426 MHz	Channel 44:	2446 MHz	Channel 64:	2466 MHz
Channel 05:	2407 MHz	Channel 25:	2427 MHz	Channel 45:	2447 MHz	Channel 65:	2467 MHz
Channel 06:	2408 MHz	Channel 26:	2428 MHz	Channel 46:	2448 MHz	Channel 66:	2468 MHz
Channel 07:	2409 MHz	Channel 27:	2429 MHz	Channel 47:	2449 MHz	Channel 67:	2469 MHz
Channel 08:	2410 MHz	Channel 28:	2430 MHz	Channel 48:	2450 MHz	Channel 68:	2470 MHz
Channel 09:	2411 MHz	Channel 29:	2431 MHz	Channel 49:	2451 MHz	Channel 69:	2471 MHz
Channel 10:	2412 MHz	Channel 30:	2432 MHz	Channel 50:	2452 MHz	Channel 70:	2472 MHz
Channel 11:	2413 MHz	Channel 31:	2433 MHz	Channel 51:	2453 MHz	Channel 71:	2473 MHz
Channel 12:	2414 MHz	Channel 32:	2434 MHz	Channel 52:	2454 MHz	Channel 72:	2474 MHz
Channel 13:	2415 MHz	Channel 33:	2435 MHz	Channel 53:	2455 MHz	Channel 73:	2475 MHz
Channel 14:	2416 MHz	Channel 34:	2436 MHz	Channel 54:	2456 MHz	Channel 74:	2476 MHz
Channel 15:	2417 MHz	Channel 35:	2437 MHz	Channel 55:	2457 MHz	Channel 75:	2477 MHz
Channel 16:	2418 MHz	Channel 36:	2438 MHz	Channel 56:	2458 MHz	Channel 76:	2478 MHz
Channel 17:	2419 MHz	Channel 37:	2439 MHz	Channel 57:	2459 MHz	Channel 77:	2479 MHz
Channel 18:	2420 MHz	Channel 38:	2440 MHz	Channel 58:	2460 MHz	Channel 78:	2480 MHz
Channel 19:	2421 MHz	Channel 39:	2441 MHz	Channel 59:	2461 MHz		

- 1. The EUT is a AI Camera with a built-in WLAN and Bluetooth V5.0,V3.0, V2.1+EDR transceiver, this report for Bluetooth V3.0, V2.1+EDR.
- 2. These tests were conducted on a sample for the purpose of demonstrating compliance of Bluetooth transmitter with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
- 3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test
- 4. Bluetooth operation was evaluated at both 1Mb/s and 3Mb/s data rates. 2Mb/s data rate was found, through pre-testing, to produce emissions similar to those for 3Mb/s.

Test Mode	Mode 1: Transmit - 1Mbps (GFSK)
	Mode 2: Transmit - 3Mbps (8DPSK)

1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Prod	uct	Manufacturer	Model No.	Serial No.	Power Cord
1	LCD Monitor	ASUS	VS229HA	F4LMQS135395	Non-Shielded, 1.8m
2	Notebook PC	DELL	Latitude 5580	2HRD7H2	Non-Shielded, 0.8m
3	Microphone & Earphone	Ergotech	ET-E201	N/A	Non-Shielded, 2.0m

Signal Cable Type		Signal cable Description
А	USB Cable	Non-Shielded, 1.0m
В	HDMI Cable	Non-Shielded, 1.5m
С	Microphone & Earphone Cable	Non-Shielded, 2.0m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

- 1. Setup the EUT as shown in Section 1.4.
- 2. Execute software "QRCT, Ver. 3.0.303.0" on the Notebook PC.
- 3. Configure the test mode, the test channel, and the data rate.
- 4. Press "OK" to start the continuous Transmit.
- 5. Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	30-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site:

http://www.dekra.com.tw/english/about/certificates.aspx?bval=5

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: <u>http://www.dekra.com.tw/index_en.aspx</u>

Site Description:	Accredited by TAF Accredited Number: 3023
Site Name: Site Address:	DEKRA Testing and Certification Co., Ltd No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C. TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : info.tw@dekra.com

FCC Accreditation Number: TW3023

1.7. List of Test Equipment

For Conducted measurements /CB3/SR8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
	Temperature Chamber	WIT GROUP	TH-1S-B	EQ-201-00146	2019/2/26	2020/2/25
Х	Spectrum Analyzer	Agilent	N9010A	MY53470892	2018/09/27	2019/09/26
Х	Peak Power Analyzer	Keysight	8990B	MY51000410	2018/08/01	2019/07/31
Х	Wideband Power Sensor	Keysight	N1923A	MY56080003	2018/07/25	2019/07/24
Х	Wideband Power Sensor	Keysight	N1923A	MY56080004	2018/07/25	2019/07/24
Х	EMI Test Receiver	R&S	ESCS 30	100369	2018/11/19	2019/11/18
Х	LISN	R&S	ENV216	101105	2019/03/30	2020/03/29
Х	LISN	R&S	ESH3-Z5	836679/014	2018/04/02	2019/04/01
X	Coaxial Cable	DEKRA	RG 400	LC018-RG	2018/06/21	2019/06/20

For Radiated measurements /Site3/CB8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
Х	Spectrum Analyzer	R&S	FSP40	100170	2019/3/11	2020/3/10
Х	Loop Antenna	Teseq	HLA6121	37133	2017/10/13	2019/10/12
Х	Bilog Antenna	Schaffner Chase	CBL6112B	2707	2018/06/24	2019/06/23
Х	Coaxial Cable	DEKRA	RG 214	LC003-RG	2018/06/14	2019/06/13
Х	Pre-Amplifier	Jet-Power	JPA-10M1G33	170101000330010	2018/06/14	2019/06/13
Х	Horn Antenna	ETS-Lindgren	3117	00135205	2018/05/03	2019/05/02
Х	Horn Antenna	SCHWARZBECK	9120D	576	2018/12/18	2019/12/17
Х	Pre-Amplifier	EMCI	EMC012630SE	980210	2018/04/10	2019/04/09
Х	Horn Antenna	Com-Power	AH-840	101043	2019/01/19	2020/01/18
Х	Amplifier + Cable	EMCI	EMC184045SE	980370	2019/3/21	2020/3/20
Х	Filter	MICRO-TRONICS	BRM50702	G270	2018/08/06	2019/08/05
X	Filter	MICRO-TRONICS	BRM50716	G196	2018/08/06	2019/08/05

Note:

1. All equipments are calibrated every one year.

2. The test instruments marked with "X" are used to measure the final test results.

3. Test Software version :QuieTek EMI 2.0 V2.1.113.



2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBµV) Limit					
Frequency	Limits				
MHz	QP	AV			
0.15 - 0.50	66-56	56-46			
0.50-5.0	56	46			
5.0 - 30	60	50			

Remarks: In the above table, the tighter limit applies at the band edges.

2.3. Test Procedure

The EUT and Peripherals are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. 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.)

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 the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

2.4. Uncertainty

± 2.26 dB



2.5. Test Result of Conducted Emission

Product	:	AI Camera
Test Item	:	Conducted Emission Test
Power Line	:	Line 1
Test date	:	2019/04/19
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)



		Frequency	Correct	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	Factor (dB)	(dBuV)	(dBuV)	(dB)	(dBuV)	
1		0.158	9.746	37.200	46.946	-18.825	65.771	QUASIPEAK
2		0.173	9.742	36.120	45.862	-19.481	65.343	QUASIPEAK
3		0.189	9.737	33.090	42.827	-22.059	64.886	QUASIPEAK
4	*	0.498	9.750	28.980	38.730	-17.327	56.057	QUASIPEAK
5		3.412	9.867	28.260	38.127	-17.873	56.000	QUASIPEAK
6		9.267	10.048	20.490	30.538	-29.462	60.000	QUASIPEAK

- 1. All Reading Levels are Quasi-Peak and average value.
- 2. " " means the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Product	:	AI Camera
Test Item	:	Conducted Emission Test
Power Line	:	Line 1
Test date	:	2019/04/19
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)



		Frequency	Correct	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	Factor (dB)	(dBuV)	(dBuV)	(dB)	(dBuV)	
1		0.158	9.746	21.560	31.306	-24.465	55.771	AVERAGE
2		0.173	9.742	21.490	31.232	-24.111	55.343	AVERAGE
3		0.189	9.737	18.730	28.467	-26.419	54.886	AVERAGE
4	*	0.498	9.750	24.480	34.230	-11.827	46.057	AVERAGE
5		3.412	9.867	17.000	26.867	-19.133	46.000	AVERAGE
6		9.267	10.048	15.250	25.298	-24.702	50.000	AVERAGE

1. All Reading Levels are Quasi-Peak and average value.

2. " " means the worst emission level.

3. Measurement Level = Reading Level + Correct Factor



Product	:	AI Camera
Test Item	:	Conducted Emission Test
Power Line	:	Line 2
Test date	:	2019/04/19
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)



		Frequency	Correct	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	Factor (dB)	(dBuV)	(dBuV)	(dB)	(dBuV)	
1		0.170	9.737	36.700	46.437	-18.992	65.429	QUASIPEAK
2		0.185	9.737	32.990	42.727	-22.273	65.000	QUASIPEAK
3	*	0.498	9.740	30.310	40.050	-16.007	56.057	QUASIPEAK
4		1.435	9.788	21.260	31.048	-24.952	56.000	QUASIPEAK
5		3.181	9.862	26.960	36.822	-19.178	56.000	QUASIPEAK
6		9.814	10.088	16.380	26.468	-33.532	60.000	QUASIPEAK

1. All Reading Levels are Quasi-Peak and average value.

2. " " means the worst emission level.

3. Measurement Level = Reading Level + Correct Factor



Product	:	AI Camera
Test Item	:	Conducted Emission Test
Power Line	:	Line 2
Test date	:	2019/04/19
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)



		Frequency	Correct	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	Factor (dB)	(dBuV)	(dBuV)	(dB)	(dBuV)	
1		0.170	9.737	22.560	32.297	-23.132	55.429	AVERAGE
2		0.185	9.737	18.380	28.117	-26.883	55.000	AVERAGE
3	*	0.498	9.740	24.220	33.960	-12.097	46.057	AVERAGE
4		1.435	9.788	14.060	23.848	-22.152	46.000	AVERAGE
5		3.181	9.862	16.510	26.372	-19.628	46.000	AVERAGE
6		9.814	10.088	10.720	20.808	-29.192	50.000	AVERAGE

1. All Reading Levels are Quasi-Peak and average value.

2. " means the worst emission level.

3. Measurement Level = Reading Level + Correct Factor

3. Peak Power Output

3.1. Test Setup



3.2. Limit

The maximum peak power shall be less 1Watt.

3.3. Test Procedure

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

3.4. Uncertainty

± 1.19 dB



3.5. Test Result of Peak Power Output

Product	:	AI Camera
Test Item	:	Peak Power Output
Test Site	:	No.3 OATS
Test date	:	2019/03/22
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

Channel No.	Frequency	Measurement	Required Limit	Result
	(MHz)	(dBm)		
Channel 00	2402.00	11.80	1 Watt= 30 dBm	Pass
Channel 39	2441.00	11.67	1 Watt= 30 dBm	Pass
Channel 78	2480.00	12.03	1 Watt= 30 dBm	Pass



Product	:	AI Camera
Test Item	:	Peak Power Output
Test Site	:	No.3 OATS
Test date	:	2019/03/22
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

Channel No.	Frequency	Measurement	Required Limit	Result
	(MHz)	(dBm)		
Channel 00	2402.00	11.40	1 Watt= 30 dBm	Pass
Channel 39	2441.00	11.36	1 Watt= 30 dBm	Pass
Channel 78	2480.00	11.37	1 Watt= 30 dBm	Pass



4. Radiated Emission

4.1. Test Setup

Under 30MHz





Above 1GHz



4.2. Limits

General Radiated Emission Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits							
Frequency MHz	Field strength	Measurement distance					
IVITIZ	(microvolts/meter)	(meter)					
0.009-0.490	2400/F(kHz)	300					
0.490-1.705	24000/F(kHz)	30					
1.705-30	30	30					
30-88	100	3					
88-216	150	3					
216-960	200	3					
Above 960	500	3					

Remarks: 1. RF Voltage $(dB\mu V) = 20 \log RF$ 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 closed point of any part of the device or system.

4.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested compliance to FCC 47CFR 15.247 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna. The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

The measurement frequency range form 9kHz - 10th Harmonic of fundamental was investigated.

4.4. Uncertainty

± 4.08 dB above 1GHz
± 4.22 dB below 1GHz



4.5. Test Result of Radiated Emission

Product	:	AI Camera
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/03/25
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)(2402MHz)

Horizontal



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector
		(MHz)	(dB)	(dBµV)	(dBµV/m)	(dB)	(dBµV/m)	Туре
1		4804.000	6.787	31.734	38.521	-35.479	74.000	PEAK
2		7206.000	11.333	32.041	43.374	-30.626	74.000	PEAK
3	*	9608.000	14.713	37.920	52.633	-21.367	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

5000.000

7500.000



Product	:	AI Camera							
Test Item	:	Harmonic Radiated Emission							
Test Site :		No.3 OATS							
Test date	:	2019/03/25							
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)(2402MHz)							
Vertical									
80.0-									
70.0-									

10000.000

		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	Туре
1		4804.000	6.787	34.854	41.641	-32.359	74.000	PEAK
2		7206.000	11.333	34.671	46.004	-27.996	74.000	PEAK
3	*	9608.000	14.713	35.217	49.930	-24.070	74.000	PEAK

12500.000

Frequency (MHz)

15000.000

17500.000

20000.000

22500.000

25000.00

Note:

50.0-

(III/ABB) 30.0-20.0-10.0-1000-000

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	AI Camera
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/03/25
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)(2441MHz)

Horizontal



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	Туре
1		4882.000	6.904	33.016	39.920	-34.080	74.000	PEAK
2		7323.000	11.380	30.561	41.941	-32.059	74.000	PEAK
3	*	9764.000	15.054	34.309	49.362	-24.638	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

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	Pro Tes Tes Tes Tes	Product:AI CameraTest Item:Harmonic Radiated EmissionTest Site:No.3 OATSTest date:2019/03/25Test Mode:Mode 1: Transmit - 1Mbps (GFSK)(2441MHz)														
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		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	Туре
1		4882.000	6.904	39.978	46.882	-27.118	74.000	PEAK
2		7323.000	11.380	31.512	42.892	-31.108	74.000	PEAK
3	*	9764.000	15.054	32.639	47.692	-26.308	74.000	PEAK

Note:

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- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	AI Camera
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/03/25
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)(2480MHz)

Horizontal



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	Туре
1		4960.000	7.008	33.247	40.255	-33.745	74.000	PEAK
2		7440.000	11.485	29.033	40.518	-33.482	74.000	PEAK
3	*	9920.000	15.146	41.730	56.876	-17.124	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	AI Camera
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/03/25
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)(2480MHz)
• • • •		

Horizontal



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector	
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	Туре	
1	*	9920.000	15.146	30.840	45.986	-8.014	54.000	AVERAGE	

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	AI Camera
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/03/25
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)(2480MHz)
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		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	Туре
1		4960.000	7.008	43.364	50.372	-23.628	74.000	PEAK
2		7440.000	11.485	30.062	41.547	-32.453	74.000	PEAK
3	*	9920.000	15.146	39.200	54.346	-19.654	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	AI Camera
Test Item		Harmonic Radiated Emission

- Test Item :
- Test Site :
- Test date 2019/03/25 :

No.3 OATS

Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2480MHz)

Vertical



		Frequency	Frequency Correct Factor		Measure Level	Margin	Limit	Detector	
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	Туре	
1	*	9920.000	15.146	29.692	44.838	-9.162	54.000	AVERAGE	

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	AI Camera
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/03/25
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)(2402MHz)
Horizontal		



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	Туре
1		4804.000	6.787	31.724	38.511	-35.489	74.000	PEAK
2		7206.000	11.333	30.361	41.694	-32.306	74.000	PEAK
3	*	9608.000	14.713	35.560	50.273	-23.727	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



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Product Test Item	: AI C : Harr	Camera nonic Rad	iated Emis	sion					
Test data	: NO.:	02/25							
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Correct Factor Reading Level Measure Level Frequency Margin Limit Detector (MHz) (dB)(dBuV) (dBuV/m) (**dB**) (dBuV/m) Type 1 4804.000 6.787 37.632 44.419 -29.581 74.000 PEAK 2 7206.000 11.333 30.461 41.794 -32.206 74.000 PEAK 3 * 9608.000 47.350 74.000 PEAK 14.713 32.637 -26.650

Frequency (MHz)

Note:

- All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average 1. measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.

- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	AI Camera
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/03/25
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)

Horizontal



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	Туре
1		4882.000	6.904	32.286	39.190	-34.810	74.000	PEAK
2		7323.000	11.380	32.532	43.912	-30.088	74.000	PEAK
3	*	9764.000	15.054	31.729	46.782	-27.218	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	AI Camera
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/03/25
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	Туре
1	*	4882.000	6.904	38.248	45.152	-28.848	74.000	PEAK
2		7323.000	11.380	31.522	42.902	-31.098	74.000	PEAK
3		9764.000	15.054	27.959	43.012	-30.988	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	AI Camera
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/03/25
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2480MHz)

Horizontal



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	Туре
1		4960.000	7.008	32.547	39.555	-34.445	74.000	PEAK
2		7440.000	11.485	29.883	41.368	-32.632	74.000	PEAK
3	*	9920.000	15.146	38.910	54.056	-19.944	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	AI Camera
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/03/25
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2480MHz)
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		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector
		(MHZ)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	Туре
1	*	9920.000	15.146	24.610	39.756	-14.244	54.000	AVERAGE

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	AI Camera
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/03/25
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2480MHz)





		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	Туре
1		4960.000	7.008	42.724	49.732	-24.268	74.000	PEAK
2		7440.000	11.485	29.862	41.347	-32.653	74.000	PEAK
3	*	9920.000	15.146	36.982	52.128	-21.872	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.


Product	:	AI Camera
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/03/27
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (2440MHz)

Horizontal



		Frequency	Correct	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	Factor (dB)	(dBµV)	(dBµV/m)	(dB)	(dBµV/m)	
1	*	31.940	5.185	27.589	32.774	-7.226	40.000	QUASIPEAK
2		173.560	-2.910	35.010	32.100	-11.400	43.500	QUASIPEAK
3		282.200	1.230	30.454	31.684	-14.316	46.000	QUASIPEAK
4		352.040	3.477	30.729	34.206	-11.794	46.000	QUASIPEAK
5		495.600	6.615	31.872	38.487	-7.513	46.000	QUASIPEAK
6		935.980	12.712	21.314	34.026	-11.974	46.000	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	AI Camera
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/03/27

Test Mode Mode 1: Transmit - 1Mbps (GFSK) (2440MHz) :

Vertical



		Frequency	Correct	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	Factor (dB)	(dBµV)	(dBµV/m)	(dB)	(dBµV/m)	
1	*	35.820	4.005	30.775	34.780	-5.220	40.000	QUASIPEAK
2		117.300	-0.696	25.284	24.588	-18.912	43.500	QUASIPEAK
3		369.500	4.034	23.215	27.249	-18.751	46.000	QUASIPEAK
4		499.480	6.683	23.860	30.543	-15.457	46.000	QUASIPEAK
5		588.720	8.203	22.311	30.514	-15.486	46.000	QUASIPEAK
6		833.160	11.404	25.361	36.765	-9.235	46.000	QUASIPEAK

- All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average 1. measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- The average measurement was not performed when the peak measured data under the limit of average 6. detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	AI Camera
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/03/27
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2440MHz)

Horizontal



		Frequency	Correct	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	Factor (dB)	(dBµV)	(dBµV/m)	(dB)	(dBµV/m)	
1	*	35.820	4.005	29.797	33.802	-6.198	40.000	QUASIPEAK
2		171.620	-2.855	38.980	36.125	-7.375	43.500	QUASIPEAK
3		286.080	1.320	30.988	32.308	-13.692	46.000	QUASIPEAK
4		352.040	3.477	29.770	33.247	-12.753	46.000	QUASIPEAK
5		491.720	6.545	31.918	38.463	-7.537	46.000	QUASIPEAK
6		833.160	11.404	22.668	34.072	-11.928	46.000	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.



:	AI Camera
:	General Radiated Emission
:	No.3 OATS
:	2019/03/27
:	Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)
	: : : :





		Frequency	Correct	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	Factor (dB)	(dBµV)	(dBµV/m)	(dB)	(dBµV/m)	
1	*	35.820	4.005	33.941	37.946	-2.054	40.000	QUASIPEAK
2		130.880	-0.747	26.719	25.972	-17.528	43.500	QUASIPEAK
3		291.900	1.460	26.187	27.647	-18.353	46.000	QUASIPEAK
4		499.480	6.683	23.397	30.080	-15.920	46.000	QUASIPEAK
5		697.360	9.353	23.059	32.412	-13.588	46.000	QUASIPEAK
6		833.160	11.404	23.904	35.308	-10.692	46.000	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

5. **RF Antenna Conducted Test**

5.1. Test Setup



5.2. Limits

According to FCC Section 15.247(d). 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 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, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

5.3. Test Procedure

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

5.4. Uncertainty

± 1.20dB

5.5. Test Result of RF Antenna Conducted Test

Product	:	AI Camera
Test Item	:	RF Antenna Conducted Test
Test Site	:	No.3 OATS
Test date	:	2019/03/27
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

Figure Channel 00:









Note: The above test pattern is synthesized by multiple of the frequency range.

-80

5



Product	:	AI Camera
Test Item	:	RF Antenna Conducted Test
Test Site	:	No.3 OATS
Test date	:	2019/03/27
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)









Note: The above test pattern is synthesized by multiple of the frequency range.

GHz

15

20

25

10



6. Band Edge

6.1. Test Setup

RF Radiated Measurement:

Above 1GHz



RF Conducted Measurement



6.2. Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

6.3. Test Procedure

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The bandwidth setting below 1GHz and above 1GHz on the field strength meter is 120 kHz and 1MHz, respectively.

6.4. Uncertainty

- ± 4.08 dB above 1GHz
- ± 4.22 dB below 1GHz



6.5. **Test Result of Band Edge**

Product	:	AI Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/03/18
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (2402MHz)

RF Radiated Measurement (Horizontal):

Channal No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Docult
Channel No.	(MHz)	(dB)	(dBµV)	(dBµV/m)	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
00 (Peak)	2390.000	6.474	40.978	47.453	74.00	54.00	Pass
00 (Peak)	2400.000	6.528	64.437	70.965	74.00	54.00	Pass
00 (Peak)	2402.174	6.541	96.613	103.154			
00 (Average)	2390.000	6.474	23.124	29.599	74.00	54.00	Pass
00 (Average)	2400.000	6.528	40.027	46.555	74.00	54.00	Pass
00 (Average)	2402.029	6.540	80.345	86.885			



Horizontal (Peak)



Figure Channel 00:

Horizontal (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. 1.
- 2. 3.
- Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level.
- 4.
- Measurement Level = Reading Level + Correction Factor. 5.
- The average measurement was not performed when the peak measured data is under the limit of 6. average detection.



Product	:	AI Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/03/18
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (2402MHz)

RF Radiated Measurement (VERTICAL):

Channel Ma	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	(dBµV/m)	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
00 (Peak)	2390.000	5.880	42.767	48.648	74.00	54.00	Pass
00 (Peak)	2400.000	5.879	72.348	78.227	74.00	54.00	Pass
00 (Peak)	2402.174	5.884	103.828	109.712			
00 (Average)	2390.000	5.880	24.801	30.682	74.00	54.00	Pass
00 (Average)	2400.000	5.879	45.808	51.687	74.00	54.00	Pass
00 (Average)	2402.029	5.884	86.477	92.361			

Figure Channel 00:

VERTICAL (Peak)



Figure Channel 00:

VERTICAL (Average)



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level. Measurement Level = Reading Level + Correction Factor. 2. 3.
- 4.
- 5.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.



Product	:	AI Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/03/18
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (2480MHz)

RF Radiated Measurement (Horizontal):

Channal Ma	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Docult
Channel No.	(MHz)	(dB)	$(dB\mu V)$	$(dB\mu V/m)$	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
78 (Peak)	2480.022	7.086	97.798	104.883			Pass
78 (Peak)	2483.500	7.110	50.411	57.521	74.00	54.00	Pass
78 (Average)	2480.022	7.086	81.962	89.047			Pass
78 (Average)	2483.500	7.110	26.144	33.254	74.00	54.00	Pass

Figure Channel 78:

Horizontal (Peak)



Figure Channel 78:

Horizontal (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level. 1.
- 2.
- 3.
- 4.
- Measurement Level = Reading Level + Correction Factor. 5.
- The average measurement was not performed when the peak measured data is under the limit of 6. average detection.



Product	:	AI Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/03/18
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (2480MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Recult
Channel No.	(MHz)	(dB)	(dBµV)	(dBµV/m)	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
78 (Peak)	2480.022	6.342	103.785	110.127			Pass
78 (Peak)	2483.500	6.363	55.535	61.898	74.00	54.00	Pass
78 (Average)	2480.022	6.342	85.343	91.685			Pass
78 (Average)	2483.500	6.363	30.045	36.408	74.00	54.00	Pass

Figure Channel 78:

VERTICAL (Peak)



Figure Channel 78:

VERTICAL (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level.
- 1. 2. 3.
- 4.
- 5. Measurement Level = Reading Level + Correction Factor.
- The average measurement was not performed when the peak measured data is under the limit of 6. average detection.



Product	:	AI Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/03/18
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2402MHz)

RF Radiated Measurement (Horizontal):

Channal No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	(dBµV/m)	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
00 (Peak)	2390.000	6.474	42.559	49.034	74.00	54.00	Pass
00 (Peak)	2400.000	6.528	69.656	76.184	74.00	54.00	Pass
00 (Peak)	2402.029	6.540	95.806	102.346			
00 (Average)	2390.000	6.474	23.431	29.906	74.00	54.00	Pass
00 (Average)	2400.000	6.528	46.436	52.964	74.00	54.00	Pass
00 (Average)	2402.029	6.540	78.464	85.004			





Horizontal (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level. Measurement Level = Reading Level + Correction Factor. 1.
- 2.
- 3.
- 4.
- 5.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.



Product	:	Al Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/03/18
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2402MHz)

RF Radiated Measurement (VERTICAL):

.....

Channal Ma	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
00 (Peak)	2390.000	5.880	42.727	48.608	74.00	54.00	Pass
00 (Peak)	2400.000	5.879	77.148	83.027	74.00	54.00	Pass
00 (Peak)	2402.029	5.884	103.164	109.048			
00 (Average)	2390.000	5.880	25.309	31.190	74.00	54.00	Pass
00 (Average)	2400.000	5.879	52.197	58.076	74.00	54.00	Pass
00 (Average)	2402.029	5.884	84.150	90.034			

Figure Channel 00:

-.





Figure Channel 00:

VERTICAL (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level. 1.
- 2. 3.
- 4.
- Measurement Level = Reading Level + Correction Factor. 5.
- The average measurement was not performed when the peak measured data is under the limit of 6. average detection.



Product	:	AI Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/03/18
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2480MHz)

RF Radiated Measurement (Horizontal):

Channal No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Docult
Channel No.	(MHz)	(dB)	(dBµV)	(dBµV/m)	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
78 (Peak)	2480.022	7.086	97.027	104.112			Pass
78 (Peak)	2483.500	7.110	46.946	54.056	74.00	54.00	Pass
78 (Average)	2480.022	7.086	78.893	85.978			Pass
78 (Average)	2483.500	7.110	26.697	33.807	74.00	54.00	Pass

Figure Channel 00:

Horizontal (Peak)



Figure Channel 00:

Horizontal (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. 1.
- 2. 3.
- Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level.
- 4.
- 5. Measurement Level = Reading Level + Correction Factor.
- The average measurement was not performed when the peak measured data is under the limit of 6. average detection.



Pro	oduct	:	AI Camera
Te	st Item	:	Band Edge
Te	st Site	:	No.3 OATS
Te	st date	:	2019/03/18
Te	st Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2480MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Peak Limit (dBµV/m)	Arerage Limit (dBµV/m)	Result
78 (Peak)	2480.022	6.342	103.130	109.472			Pass
78 (Peak)	2483.500	6.363	53.157	59.520	74.00	54.00	Pass
78 (Average)	2480.022	6.342	83.934	90.276			Pass
78 (Average)	2483.500	6.363	30.851	37.214	74.00	54.00	Pass



VERTICAL (Peak)



Figure Channel 78:

VERTICAL (Average)



- 1. 2. 3.
- 4.
- 5.
- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level. Measurement Level = Reading Level + Correction Factor. The average measurement was not performed when the peak measured data is under the limit of average detection 6. average detection.



Product	:	AI Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)(Hopping off)

Measurement Level	Result
Δ (dB)	
> 20	PASS

Figure Channel 00:

Agilent Spect	rum Analyzer	- Swept SA								
Center F	[⊮] req 2.39	50 0 AC	lz	Tria: Erro	IT REF	Avg Type	ALIGNAUTO Log-Pwr	10:42:11 A	M Mar 22, 2019	Frequency
10 dB/div	Ref Offs Ref 20.	F IF et 0.8 dB 80 dBm	NO: Fast ⊆ Gain:Low	#Atten: 30	dB	ſ	/kr3 2.3	99 861 -44.5	95 GHz 96 dBm	Auto Tune
10.8 0.800 -9.20									-9.02 dBm	Center Free 2.397000000 GH
-19.2 -29.2 -39.2							3		WWW.	Start Fred 2.390000000 GH
-49.2 -59.2 utbuurg -69.2	aparat-courteelte	hurse hardende	a en het al house	يون مدارين رواندي ورواندي . مراجع	نى يەربۇلىكى ئىلىكى ئەرىكى ئەرىكى ئەرىكى ئەرىكى	mahili	1077 ···			Stop Free 2.404000000 GH
Start 2.3 #Res BW	90000 GH / 100 kHz	z	#VBV	V 300 kHz	FIIM	Sweep (#	Swp) 2.6	top 2.404 667 ms (4	0000 GHz 0001 pts)	CF Stej 1.400000 MH <u>Auto</u> Ma
1 N 2 N 3 N 4 5	1 f 1 f 1 f	2,402 002 5 2,400 000 0 2,399 861 5	5 GHz 0 GHz 5 GHz	10.98 dE -53.78 dB -44.96 dB	m m m					Freq Offse 0 H
7 8 9 10 11										
MSG							STATUS	5	>	

Figure Channel 78:

Agilent Spect	rum Analyzer - Sv	wept SA								
🔎 Center F	req 2.4890	00000 GH	z	Trin Err	NT REF	Avg T _}	ALIGNAUTO	10:56:48 A TRA	M Mar 22, 2019 CE 1 2 3 4 5 6	Frequency
10 dB/div	Ref Offset 0 Ref 20.80	PI IFG 0.8 dB dBm	l0: Fast G ain:Low	#Atten: 30) dB		Mkr3 2.4	484 091 -53.	25 GHz 83 dBm	Auto Tune
10.8 0.800 -9.20	Å								-8.31 dBm	Center Freq 2.489000000 GHz
-19.2 -29.2 -39.2										Start Freq 2.478000000 GHz
-49.2 //		Hallow Cardon	Annahast	N-A-Cases	adaalaa ka			latron march	anta ann anna	Stop Freq 2.50000000 GHz
Start 2.47 #Res BW	7800 GHz 100 kHz		#VBV	V 300 kHz		Sweep	(#Swp) 2.0	Stop 2.5 667 ms (4	0000 GHz 0001 pts)	CF Step 2.200000 MHz Auto Man
1 N 2 N 3 N 4 5 6	RC 501 1 f 1 f 1 f 	2.480 006 95 2.483 500 00 2.484 091 25	5 GHz) GHz 5 GHz	11,69 dE -56,52 dE -53,83 dE	3m 3m 3m	NCTION	FUNCTION WIDTH	Functi		Freq Offset 0 Hz
9 9 10 11 <				(a)			CTATU	e.		



Product	:	AI Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (Hopping off)

Measurement Level	Result
Δ (dB)	
> 20	PASS

Figure Channel 00:

Agilent Spectrum Analyzer - Swept	I SA				
Center Freg 2.397000	000 GHz	INT REF	ALIGNAUTO Avg Type: Log-Pwr	11:05:28 AM Mar 22, 2019 TRACE 1 2 3 4 5 6	Frequency
Ref Offset 0.8 of 10 dB/div Ref 20.80 dE	PNO: Fast IFGain:Low BB BM	Trig: Free Run #Atten: 30 dB	Mkr3 2.3	99 843 05 GHz -48.05 dBm	Auto Tune
10.8 0.800 -9.20				1.51 dbn	Center Freq 2.397000000 GHz
-19.2			3		Start Freq 2.39000000 GHz
-49.2 -59.2 ************************************	ng the state of the second	an the state of th			Stop Freq 2.404000000 GHz
Start 2.390000 GHz #Res BW 100 kHz	#VBW 3	00 kHz	Sweep (#Swp) 2.6	top 2.404000 GHz 667 ms (40001 pts)	CF Step 1.400000 MHz Auto Man
I N I F 2.6 2 N 1 f 2.6 3 N 1 f 2.6 4 - - - - 5 - - - - 6 - - - - 7 - - - - -	401 864 30 GHz 400 000 00 GHz 399 843 05 GHz	8.49 dBm 53.39 dBm 48.05 dBm			Freq Offset 0 Hz
8 9 10 11 <		-	STATUS	×	

Figure Channel 78:

Agilent Spec	irum An	alyzer - Sw	ept SA								
Center I	Rie Freq	50 Q 2.48900	AC 00000 GH	z	Tria: Era	NT REF	Avg T	ALIGNAUTO ype: Log-Pwr	11:21:51 A TRA	M Mar 22, 2019 CE 1 2 3 4 5 6	Frequency
10 dB/div	Re	f Offset 0.8	er IFC B dB dBm	10: Fast G Sain:Low	#Atten: 34	dB		Mkr3 2.	484 625 -53.	30 GHz 98 dBm	Auto Tune
10.8 0.800 -9.20	Å	1								-10.58 dBm	Center Freq 2.489000000 GHz
-19.2 -29.2	_	h		. 2							Start Free 2.478000000 GHz
-49.2 *			han land	-	As of March As a	animentent	ma Desistenting and the	n Materia di Santa di	an a	dan antalasian	Stop Free 2.50000000 GHz
Start 2.4 #Res BV	7800 / 100	GHz kHz		#VB\	W 300 kHz		Sweep	(#Swp) 2.	Stop 2.5 667 ms (4	0000 GHz 0001 pts)	CF Step 2.200000 MH Auto Mar
1 N	1 5		0 470 040 R	CH-	9.42 di	2m	UNCTION	FUNCTION WIDTH	FUNCTI	UN VALUE	
2 N 3 N 4 5			2,483,500,01 2,484,625,31) GHz) GHz) GHz	-54.85 df -53.98 df	3m 3m				=	Freq Offsel 0 Hz
7 8 9 10				-							
< .		1			11		- 1		el		
MaG								STATU	3		



Product	:	AI Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)(Hopping on)

Measurement Level	Result
Δ (dB)	
> 20	PASS

Figure Channel 00 Hopping:

Agilent Spectrum Analyzer - Swept SA				
Cepter Freq 2 397000000 GHz	INT REF	ALIGNAUTO 10:44: Avg Type: Log-Pwr	14 AM Mar 22, 2019 TRACE 1 2 3 4 5 6	Frequency
PND: Fast IFGain:Low Ref Offset 0.8 dB	J Trig: Free Run #Atten: 30 dB	Mkr3 2.399 04	16 80 GHz	Auto Tune
10.8 0.500 9.20			1 	Center Freq 2.397000000 GHz
-19.2 -29.2 -39.2		A3 22		Start Freq 2.390000000 GHz
-49.2 -69.2 <mark>Catalana and Anna Anna Anna Anna Anna Anna An</mark>	And the second sec			Stop Freq 2.404000000 GHz
Start 2.390000 GHz #Res BW 100 kHz #VBV	V 300 kHz	Stop 2. Sweep (#Swp) 2.667 ms	404000 GHz (40001 pts)	CF Step 1.400000 MHz <u>Auto</u> Man
1 N 1 f 2.402 038 25 GHz 2 N 1 f 2.400 000 00 GHz 3 N 1 f 2.399 046 80 GHz 4 5 6	10.83 dBm -54.41 dBm -52.44 dBm			Freq Offset 0 Hz
0 7 8 9 9 10 11 11			•	
MSG		STATUS	>	

Figure Channel 78 Hopping:

Agilent Spectrum Analyzer - Swept SA				
X RF 50 Ω AC	INT REF	ALIGNAUTO	10:58:43 AM Mar 22, 2019	Erequency
Center Freq 2.489000000 GHz	Tria: Free Run	Avg Type: Log-Pwr	TYPE MWAAAAAA	Trequency
IFGain:Low	#Atten: 30 dB		DET P NNNN N	Auto Tumo
Ref Offset 0.8 dB		Mkr3 2.4	95 022 50 GHz	Auto Turie
10 dB/div Ref 20.80 dBm			-04.20 UBIII	
10.8				Contor From
				Center Freq
0.800			0.10.00	2.489000000 GHz
-9.20			-6.76 000	
-19.2				Otort From
.29.2				start Freq
				2.478000000 GHz
-39.2				
-49.2		l − I ♦°		Oton From
-59.2 TVI with the set of the set	proministry and subscreening	an and the second second	energia de la constance de la c	StopFreq
-69.2				2.500000000 GHz
Start 2.47800 GHz			Stop 2.50000 GHz	CF Step
#Res BW 100 kHz #VBW	300 kHz	Sweep (#Swp) 2.6	67 ms (40001 pts)	2.200000 MHz
MKALMODEL TACL SCL	V EUN	TION EUNCTION WOTH	FUNCTION VALUE	<u>Auto</u> Man
1 N 1 f 2.479 057 10 GHz	11.22 dBm			
2 N 1 f 2.483 500 00 GHz	-58.33 dBm			E
6 N 1 f 2.495 022 50 GHz	-54.20 dBm			Frequised
5				0 Hz
6				
8				
9				
10				
<			>	
MSG		STATUS		



AI Camera
Band Edge
No.3 OATS
Mode 2: Transmit - 3Mbps (8DPSK) (Hopping on)

Measurement Level	Result
Δ (dB)	
> 20	PASS

Figure Channel 00 Hopping:

Agiler	nt Spi	ectru	m Ar	nalyz	er - Sv	wept	t SA																						
Cer	nter	Fr	R eq	2.3	50 t 970	े 100	AC) GH	lz				1	NT RE	5		Avg	Тур	ALIGN : Log	JAUTO J-Pwr		11:09:3 1	I AN	Mar 22	, 201 3 4 5	19	Tra	ace/Det	ector
10 d	B/di	v	Re Re	f Off	íset 0 0.80	0.8 d	iB 3m	P1 IFC	NO: F Gain:	ast C Low	7	#Atte	n: 30	dB	n 			1	۸kr	3 2.	39	9 95 -5	7 1.5	15 C	GH Br	z	S	electT	Frace 1
10.8 0.800	3																				1	AA AA	pshe		hod	M		Clea	rWrite
-19.2 -29.2 -39.2													_							(horizon	1			-13	05.00		Tr	ace A	verag
-49.2 -59.2 -69.2	ومه	مرديندي	••••	يبوقده	المهر		الميديية	اعرهام				indunated	مبرده		<u></u>		netter	yutur	×									Ма	x Hole
Sta #Re	rt 2. s B	.390 W 1	000	0 G kH	Hz z		×			#VB	w :	300 k	Hz		FI,	E	Swee	ep (#	Sw	p) 2.	Sto .667	p 2.4 7 ms	104 (40	000 0001	GH pts	IZ S)		Mi	n Hole
1 2 3 4 5 6	N N	1 1	f			2.4	402 9 400 0 399 9	971 00 000 00 957 10	0 GH 0 GH 5 GH	iz iz		6.9 -56.3 -51.5	5 dE 4 dE 8 dE	3m 3m 3m		_									=		,	View E	Blank View
7 8 9 10 11	_				_	_	_	_	_		_		_		_		_		_	_		_	_			×			More 1 of:
MSG																				STAT	JS				2				

Figure Channel 78 Hopping:

Agilent Spect	rum Analyzer - Sw	rept SA								
VI Start Fre	RF 50 G			1	NT REF	Avg Typ	ALIGNAUTO	11:24:07 A	M Mar 22, 2019 × 1 2 3 4 5 6	Frequency
	Ref Offset 0.	PNI IFGa	D: Fast 🖵 iin:Low	J Trig: Free #Atten: 30	Run dB			197 262	10 GHz	Auto Tune
10 dB/div	Ref 20.80	dBm						-55	25 0.611	Conter From
0.800	Wym.									2.489000000 GHz
-19.2									+13.74 dBm	Start From
-29.2	- MA									2.478000000 GHz
-49.2 -59.2 -69.2		2 	entitionshe	den staat daaren	www.water	Abduende be	lation of the second	•••••••••	trans. No. 42	Stop Freq 2.50000000 GHz
Start 2.4 #Res BW	7800 GHz 100 kHz		#VBW	300 kHz		Sweep (‡	#Swp) 2.0	Stop 2.50 567 ms (4	0000 GHz 0001 pts)	CF Step 2.200000 MHz
	RC SCL	2 479 994 40	GHz	6 26 dE	FUN	CTION FU	NCTION WIDTH	FUNCTION	IN VALUE	<u>Auto</u> Man
2 N 3 N 4		2.497 262 10 2.497 262 10	GHz GHz	-56.00 dB -55.25 dB	m				_	Freq Offset 0 Hz
7 8 9										
10 11 <				<u>u</u>					>	
MSG							STATUS	5		



7. Channel Number

7.1. Test Setup



7.2. Limit

Frequency hopping systems operating in the 2400-2483.5 MHz bands shall use at least 75 hopping frequencies.

7.3. Test Procedure

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

7.4. Uncertainty

N/A



7.5. Test Result of Channel Number

Product	:	AI Camera
Test Item	:	Channel Number
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

Frequency Range	Measurement	Required Limit	Result		
(MHz)	(Hopping Channel)	(Hopping Channel)			
2402 ~ 2480	79	>75	Pass		

2402-2421MHz

2422-2441MHz

Agilent Spectrum Analyzer - Swept SA			Agilent Spectrum Analyzer - Swept SA		
Center Freq 2.411000000 GHz	ALIGNAUTO 11:00:01 AM Mar 22, 2019 Avg Type: Log-Pwr TRACE 1:2:3:4:5:6	Frequency	Center Freq 2.431500000 GHz Tel Augustation 110032 AMMar 22,2019 Freque Avg Type: Log-Pwr Text [1:2:2:4:5:6	ncy	
IFGain:Low #Atten: 30 dB	DET P NNNN	Auto Tune	PRO Frat C The read of the rea	o Tune	
Ref Offset 0.8 dB 10 dB/div Ref 20.80 dBm	Mkr2 2.421 000 GHz 10.52 dBm		Ref Offset 0.8 dB Mkr2 2.441 00 GHz		
		Center Freq 2.411000000 GHz	Freq 106 01 Cent GHZ 2000 C24315000 24315000	er Freq DOD GHz	
-19.2		Start Freq 2.400500000 GHz	IP2 IP2 <th ip2<="" td="" th<=""><td>rt Freq 000 GHz</td></th>	<td>rt Freq 000 GHz</td>	rt Freq 000 GHz
492 492 492 492 492 492 492 492 492 492		Stop Freq 2.421500000 GHz	492 500 500 500 500 500 2.44150	p Freq 000 GHz	
Start 2.40050 GHz #Res BW 100 kHz #VBW 100 kHz	Stop 2.42150 GHz Sweep (#Swp) 2.533 ms (1001 pts)	CF Step 2.100000 MHz Auto Man	Start 2.42150 GHz Stop 2.44150 GHz Stop 2.44150 GHz CO MHz #Kes BW 100 kHz Sweep (#Swp) 2.467 ms (100 1 PL) 2.000 MHz #VBW 100 kHz Sweep (#Swp) 2.467 ms (100 1 PL) 2.000	F Step 00 MHz Man	
1 N 1 f 2.402.000 GHz 9.86 dBm 2 N 1 f 2.421.000 GHz 10.62 dBm 3 4 5		Freq Offset 0 Hz	1 N 1 7 2.422.00 GHz 9.97 dBm fset 3 - - - - - Freq 0 Hz 4 - - - - - - Freq	Offset 0 Hz	
0 7 8 9 10 11					
MSG	STATUS		MEG STATUS		

2442-2461MHz

2462-2480MHz

Agilant Spectrum Analyzer - Swept SA		Agilant Spectrum Analyzer - Swept SA
#F 50.9 AC PIT REF ALIGNAUTO 11:01:00 AMMer 22, 201 Center Freq 2.451500000 GHz Avg Type: Log-Pwr True: [1:2:3:43 True: [1:2:3:43	Frequency	#F 50.9 AC PIT HEF ALI2XAUTO 1101.27 AM Mr 22, 2019 Frequency Center Freq 2.471500000 GHz Trig: Free Bun Avg Type: Log-Pwr Trig: Free Bun Frequency
B Gaint.fow Arten: 30 dB ccl ^p NMr2 10 dB/div Ref Offset 0.8 dB Mkr2 2.461 00 GH 10 dB/div Ref 20.80 dBm 10.68 dBr	Auto Tune	Ref Offset 0.8 dB Mkr2 2.480 00 GHz Auto T 10 dB/dy Ref 2.8.0 dB 9.6 69 dBm Auto T
	Center Freq 2.451500000 GHz	105 01 247150000 105 02 247150000
192 292 392	Start Freq 2.441500000 GHz	-192
402	Stop Freq 2.461500000 GHz	492 592 692 692
Start 2.44150 GHz Stop 2.46150 GH #Res BW 100 kHz #VBW 100 kHz Sweep (#Swp) 2.467 ms (1001 pt	CF Step 2.000000 MHz Auto Man	Start 2.46150 GHz #Res BW 100 kHz #VBW 100 kHz Sweep (#Swp) 2.48150 GHz 2.00000
Water Cool Address of the second	Freq Offset 0 Hz	Image: Note of the second se
MSG STATUS		MSG STATUS



Product	:	AI Camera
Test Item	:	Channel Number
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

Frequency Range	Measurement	Required Limit	Result
(MHz)	(Hopping Channel)	(Hopping Channel)	
2402 ~ 2480	79	>75	Pass

2402-2421MHz

2422-2441MHz

Agilent Spectrum Analyzer - Swept SA		Agilent Spectrum Analyzer - Swept SA
#F 50.9 AC #TT RFF ALSO AUTO 112557 AWW #22,2019 Center Freq 2.411000000 GHz Avg Type: Log-Pwr TMACE [12.3 45 TMACE [12.3 45	Frequency	NF Sole AC Bit FEP ALSOLATIO 11263140Mar22,2019 Frequency Center Freq 2.431500000 GHz Trig: Free Run Avg Type: Log-Pwr Trig: Wavewave Frequency
If GainLew AAtten: 30 dB cerif NNNN Ref Offset 0.8 dB Mkr2 2.421 000 GHz 7.40 dB	Auto Tune	Ref Offset 0.8 dB Ref Offset 0.8 dB Atten: 30 dB Atten: 3
	Center Freq 2.411000000 GHz	10 delay Ref 20.30 dBm C. 77 doint 10 delay Ref 20.30 dBm C. 77 dBm
9.0 192 292 Jan 302	Start Freq 2.400500000 GHz	3.0
402	Stop Freq 2.421500000 GHz	432 StopFreq 432 StopFreq 432 2.44150000 GHz 433 2.44150000 GHz
Start 2.40050 GHz Stop 2.42150 GHz #Res BW 100 kHz #VBW 100 kHz Sweep (#Swp) 2.533 ms (1001 pts)	CF Step 2.100000 MHz Auto Man	Start 2.42150 GHz Stop 2.44150 GHz CF Step 2.4470 GHz #Res BW 100 kHz \$weep (#\$wp) 2.467 ms (1001 pt) 2.00000 Man #Res SW 100 kHz \$weep (#\$wp) 2.467 ms (1001 pt) Auto
1 N 1 f 2402000 GHz 6.42 dBm 2 N 1 f 2.421000 GHz 7.40 dBm 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Freq Offset 0 Hz	N I F 2.422 00 GHz 7.48 dBm Z N I F 2.441 00 GHz 6.77 dBm 3 4 6.77 dBm 0 Hz 0 Hz 0 Hz 5 4 6.77 dBm 0 Hz 0 Hz 0 Hz
0 -		
NG STATUS		K STATUS

2442-2461MHz

2462-2480MHz

Igilent Spectrum Analyzer - Swept SA		Agilent Spectrum Analyzer - Swept SA
NF SD (0) AC DTT HEF ALSONAUTO [11:27:26 AMM Mar 22, 2019 Center Freq 2.451500000 GHz Trig: Free Run Avg Type: Log-Pwr TRACE [1:2:3:4:57	Frequency	
If Galaction Antien: 30 dB Cert P MINUT Ref Offset 0.8 dB Mkr2 2.461 00 GHz 00 GHz 10 dB/div Ref 20.80 dBm 5.87 dBm	Auto Tune	If Galactor #Atten: 30 dB cert P NNNIN If Galactor #Atten: 30 dB Mkr2 2.480 00 GHz 10 dBiddy Ref 20.80 dBm 8.33 dBm
	Center Freq 2.451500000 GHz	1 108 1 247150000 GHz
52 192 292 392	Start Freq 2.441500000 GHz	192 292 392 392
	Stop Freq 2.461500000 GHz	402
Start 2.44150 GHz Stop 2.46150 GHz #Res BW 100 kHz #VBW 100 kHz Sweep (#Swp) 2.467 ms (1001 pts)	CF Step 2.000000 MHz Auto Man	Start 2.46150 GHz Stop 2.48150 GHz CF Step #Res BW 100 kHz #VBW 100 kHz Sweep (#Swp) 2.467 ms (1001 pts) Auto Mar
N 1 P 2.442.00 GHz 7.28 dBm 100410040000 N 1 f 2.442.00 GHz 5.87 dBm 100410040000 N 1 f 2.442.00 GHz 5.87 dBm 100410040000 N 1 f 2.461.00 GHz 5.87 dBm 100410040000	Freq Offset 0 Hz	Bit
esg Status		NGG STATUS

8. Channel Separation

8.1. Test Setup



8.2. Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

8.3. Test Procedure

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

8.4. Uncertainty

± 283Hz



8.5. Test Result of Channel Separation

Product	:	AI Camera
Test Item	:	Channel Separation
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

	Encaucinov	Measurement	Limit	Limit of (2/3)*20dB		
Channel No.	(MHz)	Level	(1-11-2)	Pondwidth (kHz)	Result	
	(WITZ)	(kHz)	(кпz)	Dalidwidtli (KFIZ)		
00	2402	1000	>25 kHz	632.0	Pass	
39	2441	1000	>25 kHz	628.0	Pass	
78	2480	1000	>25 kHz	624.0	Pass	

NOTE: The 20dB Bandwidth is refer to section 10.

Agiler	it Spe	ctrur	n Ana	lyzer - Swe	pt SA										
⊮ Cer	ter	Fre	RF Pq 2	50 Ω 2.40200	AC 0000 GH	z		Trin: Enc		Avg T	ALI /pe:L	IGN AUTO .og-Pwr	10:41:22 A TRAC	M Mar 22, 2019 E 1 2 3 4 5 6	Frequency
			Ref	Offset 0.8	PN IFG	0: Wide iain:Low	-	#Atten: 30) dB			Mkr	2 2.403	00 GHz	Auto Tune
10 a Log 10.8 0.800		'	Rei	20.80 0	IBM					¢2					Center Freq 2.402000000 GHz
-19.2 -29.2 -39.2						-~*11**	1				\	Non Marcolanda			Start Freq 2.397000000 GHz
-49.2 -59.2 -69.2	i-erlinere	where	~~~	an a		<u>дн</u>							han and a second se	Harrymonian	Stop Freq 2.407000000 GHz
Cer #Re	ter : s B\	2.4(N 1	020	00 GHz kHz		#VE	зw	100 kHz			#Sv	veep 5	Span 1 00.0 ms (0.00 MHz 1001 pts)	CF Step 1.000000 MHz .uto Man
MKR 1 2 3 4 5 6 7 8 9 10 11					× 2.402 00 2.403 00	D GHz D GHz		11.17 dE 11.22 dE	EUN 3m 3m 		FUNCT		FUNCTIO		Freq Offset 0 Hz
MSG												STATUS]

Channel 00 (2402MHz)



Agilent Spectr	um Analyzer - Swe	ept SA							
<mark>אי</mark> Center F	RF 50 Ω req 2.44100	AC 00000 GHz			Ауд Туре	ALIGNAUTO : Log-Pwr	10:49:21 Al TRAC	M Mar 22, 2019	Frequency
		PNO: Wi IFGain:L	ow #Atte	n: 30 dB			DI		Auto Tune
10 dB/div	Ref Offset 0.8 Ref 20.80 c	∃dB 1Bm				MKr	2 2.442 10.:	00 GHZ 27 dBm	
10.8 0.800					2				Center Freq 2.441000000 GHz
-19.2 -29.2 -39.2						Angles perspect			Start Freq 2.436000000 GHz
-49.2 -59.2 -69.2	v-hilling Mayoran well-thised	wheet and the first of the firs	·				Day way way and a	Manshamana	Stop Freq 2.446000000 GHz
Center 2. #Res BW	441000 GHz 100 kHz	#	¢VBW 100 k	(Hz	#	Sweep 5	Span 1 00.0 ms (0.00 MHz 1001 pts)	CF Step 1.000000 MHz Auto Man
1 N 1 2 N 1 3 4 5 6	f f f	× 2.441 00 GH 2.442 00 GH	z 10.5 z 10.2	8 dBm 7 dBm			FUNCTIO		Freq Offset 0 Hz
7 8 9 10 11 <								×	
MSG						STATUS	5		

Channel 39 (2441MHz)

Channel 78 (2480MHz)





Product	:	AI Camera
Test Item	:	Channel Separation
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

	Fraguenov	Measurement	Limit	Limit of (2/3)*20dB		
Channel No.	(MHz)	Level (kHz)	(kHz)	Bandwidth (kHz)	Result	
00	2402	1000	>25 kHz	866.0	Pass	
39	2441	1000	>25 kHz	866.0	Pass	
78	2480	1000	>25 kHz	870.0	Pass	

NOTE: The 20dB Bandwidth is refer to section 10.

Agiler	nt Spe	ctrur	n Ana	alyzer - Swe	pt SA												
<mark>الا</mark> Cen	iter	Fre	RF Pq 2	50 Ω 2.40200	AC 0000 GH	lz		I		Avg	Туре	ALIGN AUTO : Log-Pwr	11:	05:00 Af TRAC	4 Mar 22, 20 E 1 2 3 4 E M MANAN	019 56	Frequency
10 d	B/div	,	Ref Ref	Offset 0.8 5 20.80 c	PN IFC dB IBm	IO: Wide Gain:Low	*	Atten: 30) dB			Mk	r2 2.	403 9.0	00 GH	iz m	Auto Tune
10.8 0.800 -9.20								m	\ 1 س	2	\						Center Freq 2.402000000 GHz
-19.2 -29.2 -39.2							~				1						Start Freq 2.397000000 GHz
-49.2 -59.2 -69.2	Jagdelor,	ulpur-st		میر میر میروند. میروند میروند میروند میروند میروند می	harage and a second								with fires.	al open of the	U.C. Stategy		Stop Freq 2.407000000 GHz
Cen #Re	ter s B	2.41 W 1	020 00	00 GHz kHz		#V	BW 1	00 kHz			#\$	Sweep	Sp 500.0	oan 1 ms (0.00 M 1001 pt	Hz (S)	CF Step 1.000000 MHz
MKE 1 2 3 4 5 6 7 8 9 10 11	MODE N		f		× 2.402 0 2.403 0	0 GHz 0 GHz		¥ 8.98 dE 9.05 dE	3m 3m 	UNCTION				FUNCTIO	N VALUE		Freq Offset 0 Hz
/ISG												STAT	US				

Channel 00 (2402MHz)



Agilent Sp	ectrum Ar	alyzer - Swe	pt SA								
یر Center	· Freq	50 Ω 2.44100	AC 0000 GH	z	Tria: Free	IT REF	Avg Typ	ALIGN AUTO e: Log-Pwr	11:14:12 A TRA	M Mar 22, 2019	Frequency
			PN IFG	O: Wide 🕞 ain:Low	#Atten: 30	dB		Mkr	D		Auto Tune
10 dB/di	v Re	f Offset 0.8 e <mark>f 20.80</mark> d	dB Bm						8.	36 dBm	
					m	1 ~~~~	2				Center Freq 2.441000000 GHz
-9.20 — -19.2 — -29.2 — -39.2 —				m				w.			Start Freq 2.436000000 GHz
-49.2 -59.2 -69.2	monen	Marger Hiff Parlian	monador Millionsh						Waranteran	Anness Marchanter	Stop Freq 2.446000000 GHz
Center #Res B	2.4410 W 100	000 GHz kHz		#VBV	V 100 kHz		#	Sweep 5	Span 1 00.0 ms (0.00 MHz 1001 pts)	CF Step 1.000000 MHz Auto Man
1 N 2 N 3 4 5 6 7			× 2.441 00 2.442 00) GHz) GHz	8.22 dB 8.36 dB	m			FUNCTI		Freq Offset 0 Hz
8 9 10 11 <					ini			STATUS	8	▼	

Channel 39 (2441MHz)

Channel 78 (2480MHz)

Agilen	it Spe	ctrun	n Ana	alyzer - Swe	pt SA									
اللا Cen	ter	Fre	RF q 2	50 Ω 2.48000	AC 0000 GH	lz	Tria: Fra		Avg T	ype:	LIGN AUTO	11:21:12 A TRAC	M Mar 22, 2019 E 1 2 3 4 5 6	Frequency
10 d	B/div	,	Ref Ref	Offset 0.8	dB Bm	IO: Wide Sain:Low	#Atten: \$	30 dB			Mkr	□ 1 2.479 9.8	00 GHz 58 dBm	Auto Tune
Log 10.8 0.800 -9.20						~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1 Maria	2						Center Freq 2.480000000 GHz
-19.2 -29.2 -39.2									h					Start Freq 2.475000000 GHz
-49.2 -59.2 -69.2	instr	-ALD-TV	40.~*h	en and and and and and and and and and an							wert were	an a	halan maran hasalah	Stop Freq 2.485000000 GHz
Cen #Re	ter : s B\	2.48 N 1	300 00	00 GHz kHz	1	#VE	3W 100 kH	2		#5	weep 5	Span 1 00.0 ms (0.00 MHz 1001 pts)	CF Step 1.000000 MHz
MKR 2 3 4 5 6	N N N	TRC 1	f f		× 2.479 0 2.480 0	0 GHz 0 GHz	Y 9.58 c 9.58 c	IBm IBm	JNCTION	FUNI	CTION WIDTH	FUNCTIO		Freq Offset
7 8 9 10 11 <							111							
MSG											STATUS	;		t

9. Dwell Time

9.1. Test Setup



9.2. Limit

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

9.3. Test Procedure

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

9.4. Uncertainty

 \pm 25msec



9.5. Test Result of Dwell Time

Product	:	AI Camera
Test Item	:	Dwell Time
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (Channel 00,39,78 –DH5)

Frequency (MHz)	Time slot length (ms)	Hopping of Number (ms)		Dwell Time (Sec)	Limit (Sec)	Result
2402	2.880	107	31600	0.308160	0.4	Pass
2441	2.880	95	31600	0.273600	0.4	Pass
2480	2.890	100	31600	0.289000	0.4	Pass

Dwell time = Time slot length*Hopping of number

Sweep time= 79 Channel * 0.4

CH 00 Time Interval between hops

RL RF 50 0 AC Center Freq 2.402000000 GHz RACE 1 2 3 4 5 6 TVPE NWWWW DET P NNNNN Frequency Frequency Avg Type: Log-Pv Avg/Hold: 1/1 Avg Type: Log-P Trig Dela Trig: Vide Fast -Auto Tur Auto Tu Mkr1 970.0 µs 11.49 dBm Ref Offset 0.8 dB Ref 10.80 dBm Ref Offset 0.8 dB Ref 20.80 dBm 10 dE Center Fre Center Fre Start Fre 2000000 GH Start Fre Stop Free 2000000 GH Stop Fre CF Step 1.000 kHz Man CF Step 1.000000 MH ter 2.402000 BW 1.0 MHz Span 0 H Sweep 10.00 ms (1001 pts #VBW 1.0 MHz 970.0 μs 2.880 ms (Δ) 11.49 dBm 0.03 dB N t Δ1 t (Δ) Freq Offse 0 H Freq Offse 0 H Sweep 31.60 s (1001 pt #VBW 3.0 kHz

CH39 Time Interval between hops

CH 39Transmission Time

CH 00 Transmission Time

🗱 Keysight Spectrum Analyzer - Swept SA	00	🔜 🕼 Keysight Spectrum Analyzer - Swept SA
AL RF SO Q AC SENSE.INT ALIGN AUTO 03.03.39.99 M Mar 25 Center Freq 2.441000000 GHz Trice Freq Run Avg Type: Log-Pwr Trace[1:2:3	Frequency	Center Freq 2.441000000 GHz Trig Delay-1000 ms Avg Type: Log-Pwr TRACE [: 2:3 4:5 6 Frequency
PNO: Close + right read the provide out P NE IFGainLow #Atten: 20 dB OUT P NE	Auto Tune	une ΔMkr2 2.880 ms Auto Tur
lo dB/div Ref 10.80 dBm		10 dB/dV Ref 20.80 dBm 0.03 dB
0.000	Center Freq 2.441000000 GHz	Freq 10.0 (21 Center Fre GHz 1000 (241) (2
	Start Freq 2.441000000 GHz	CH2 302 3051/0 3051/0 31551/0 31551/0 31551/0 31551/0 3241000000 GH2 3241000000 GH2 31551/0 3241000000 GH2 324100000 GH2 3241000000 GH2 3241000000 GH2 3241
302	Stop Freq 2.441000000 GHz	
46.2	CF Step 1.000 kHz Auto Man	Step Center 2.441000000 GHz Span 0 Hz CF Ste VH72 Sweep 10.00 ms (1001 pts) 100000 MHz 1000000 ML
	Freq Offset	1 N 1 X 980.0 µs 11.31 dBm Foregoing Fore
²⁷³ Center 2.441000000 GHz Span i Res BW 1.0 kHz #VBW 3.0 kHz Sweep 31.60 S (1001	0 Hz pts)	
MSG STATUS		MSG



CH 78 Time Interval between hops

CH 78 Transmission Time

AL no 1960 AC SENSE INT ALLOW AUTO 0204-42 Center Freq 2.480000000 GHz Trgs: Free Run Avg Type Log-Pwr TRU PN0: Close → Trgs: Free Run Avg Type Log-Pwr TRU	MMar 25, 2019 CE 1 2 3 4 5 6 Frequency TP NNN N	KL R 200 8C Sets1201
Ref Offset 0.8 dBm 10 dBldiv Ref 10.80 dBm	Auto Tur	re Ref Offset 0.8 dB Mkr1 970.0 µS Auto Tu 10 dB/div Ref 20.80 dBm 12.04 dBm
0.000	Center Fro 2.480000000 G	Log φ1 ζ/2Δ1 q 100 2.480000000 (α 2.480000000 (2.480000000 (
	Start Fro 2.480000000 G	g 492
392	Stop Fro 2.480000000 G	492 302 302 Stop Fr Stop Fr 492 302 2 400 400
.02	CF Ste 1.000 ki Auto M	p Center 2.480000000 GHz Span 0 Hz Z Res BW 1.0 MHz #VBW 1.0 MHz Sweep 10.00 ms (1001 pts) 1.000000 Matter 2.4800 MHz Anno 1000 Matter 2.4800 MHz Anno 1000 MHz Anno 10
	Freq Offs 01	I 970.0xi 12.04 dBm I Δ1 t (Δ) 2.890 ms (Δ) -0.07 dB tt 3.01 t (Δ) -0.07 dB -0.07 dB -0.07 dB tz 4 -0.07 dB
Center 2.45000000 GHz Res BW 1.0 kHz #VBW 3.0 kHz Sweep 31.60 s	Span 0 Hz (1001 pts)	

Note:

The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case is shown on the report.



Product	:	AI Camera
Test Item	:	Dwell Time
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (Channel 00,39,78 –DH5)

Frequency (MHz)	Time slot length (ms)	Hopping of Number (ms)		Dwell Time (Sec)	Limit (Sec)	Result
2402	2.890	101	31600	0.291890	0.4	Pass
2441	2.890	113	31600	0.326570	0.4	Pass
2480	2.890	105	31600	0.303450	0.4	Pass

Dwell time = Time slot length*Hopping of number

Sweep time= 79 Channel * 0.4

CH 00 Time Interval between hops

CH 00 Transmission Time



CH39 Time Interval between hops

CH 39Transmission Time

Keysight Spectrum Analyzer - Swept SA					0 0 0	🔜 🕼 Keysight Spectrum Analyzer - Swept SA	00
Center Freq 2.441000000 GHz	Tric	SENSE (INT)	Avg Type: Log-Pv Avg/Hold: 1/1	0 03:06:25 PM Nar 25, 2019 WT TRACE 1 2 3 4 5 7 TVPE M WWWW	5 Frequency	Center Freq 2.441000000 GHz Trig Delay-1.000 ms Avg Type: Log-Pwr Trace[12:34:56 Fre	equency
PNO: IFGai	n:Low #Att	ten: 20 dB	Program. In	DET P NNNN	Auto Tune	IFGainLow Atten: 30 dB DET PINNNN	Auto Tune
Ref Offset 0.8 dB 10 dB/div Ref 10.80 dBm						Ref Offset 0.8 dB WKT 970.0 µS 10 dB/div Ref 20.80 dBm 8.90 dBm	
0.000					Center Freq 2.441000000 GHz	1 c c c c c c c c c c c c c c c c c c c	Center Freq
.19.2					Start Freq 2.441000000 GHz	192 992 992 2441	Start Freq 1000000 GHz
-29.2					Stop Freq 2.441000000 GHz	0 2 4/24/2010	Stop Free 1000000 GH:
-49.2					CF Step 1.000 kHz Auto Man	p Center 2.441000000 GHz Span 0 Hz Res BW 1.0 MHz #VBW 1.0 MHz Sweep 10.00 ms (1001 pts) Auto Degrade find (ss) x y Function Procromwork Auto	CF Step 000000 MH Mar
49 2		t the plant		u tra i contra da la	Freq Offset 0 Hz	I N I 970 μs 8.90 dBm et 3.1 t (Δ) 2.89 ms (Δ) 0.44 dB 4 3.4 - - - - - - 6 -	Freq Offse 0 H
Center 2.441000000 GHz	TYBW 3.0	KHZ	MIN.M.M.	Span 0 Hz	E		
MSG			57	ATUS		MSG STATUS	



CH 78 Time Interval between hops

CH 78	Transmission	Time
-------	--------------	------

III Keysight Spectrum Analyzer - Swept SA			and the second second	0.0	Keysight Spec	trum Analyzer - Swep	pi SA	112 - 22	100 A 100 A	11.000	and a second second second	000
Center Freq 2.480000000	GHz PNC: Close +++ Trig: Free Run	Avg Type: Log-Pwr TR Avg[Hold: 1/1	PH Mar 25, 2019 ACE 1 2 3 4 5 6 TYPE MWWWWW	Frequency	Center Fre	q 2.480000	0000 GHz	Trig Dela	ry-1.000 ms	Aug Type: Log-Pwr	03:00:15 PM Nar 25, 2019 TRACE 1 2 3 4 5 6 TVPE	Frequency
Ref Offset 0.8 dB 10 dB/div Ref 10.80 dBm	DET P NNNNN	Auto Tune	Infeature Atten: 30 dB Off P MIN Luto Tune Ref Offset 0.8 dB ΔMkr2 2.880 rf 10 dB/div Ref 20.80 dB -0.27					ΔMkr2 2.890 ms -0.27 dB	Auto Tune			
0.000				Center Freq 2.48000000 GHz	10.8 0.800	<u>01</u>		2Δ1				Center Freq 2.48000000 GHz
.19.2				Start Freq 2.480000000 GHz	-19.2 -29.2 -39.2						1965 LVL	Start Freq 2.480000000 GHz
.39.2				Stop Freq 2.480000000 GHz	-49.2 -59.2 -69.2			(material)	anternanterister	hadicatery giver does	yanathahinin anathani	Stop Freq 2.480000000 GHz
-49.2				CF Step 1.000 kHz Auto Man	Center 2.4 Res BW 1.	80000000 GI 0 MHz	Hz #VBW	V 1.0 MHz	FUNCTX	Sweep	Span 0 Hz 10.00 ms (1001 pts)	CF Step 1.000000 MHz Auto Man
69.2			1 e	Freq Offset 0 Hz	1 Ν 2 Δ1 3 4 5 6	t t (Δ)	970.0 μs 2.890 ms (Δ)	10.01 dl -0.27	Bm dB			Freq Offset 0 Hz
Center 2.48000000 GHz Res BW 1.0 kHz	#VBW 3.0 kHz	Sweep 31.60 s	Span 0 Hz s (1001 pts)		7 8 9 10 11			(用))				
MSG		STATUS			MSG					STAT	us	

Note:

The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case is shown on the report.



10. Occupied Bandwidth

10.1. Test Setup



10.2. Limits

N/A

10.3. Test Procedure

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

10.4. Uncertainty

± 283Hz



10.5. Test Result of Occupied Bandwidth

:	AI Camera
:	Occupied Bandwidth Data
:	No.3 OATS
:	Mode 1: Transmit - 1Mbps (GFSK)
	: : :

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	948		NA
39	2441	942		NA
78	2480	936		NA

Figure Channel 00:

Agiler	nt Spec	ctrun	n Ana	alyzer - Swe	pt SA								
<mark>ير</mark> Cen	ter	Fre	RF Pq 2	50 Ω 2.40200	AC 10000 GH	lz	Tria: Free		Avg Typ	ALIGNAUTO e: Log-Pwr	10:45:45 A TRA	M Mar 22, 2019 CE 1 2 3 4 5 6 PF M Watatatata	Frequency
10 d	Bídiv		Ref	Offset 0.8	er IFI dB	10: Wide ⊆ Gain:Low	#Atten: 3	D dB		Mkr2	2.401 5 -10.	35 GHz 33 dBm	Auto Tune
Log 10.8 0.800 -9.20				20.00 (2	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1 Long	$\sim 0^3$			-10.67 dBm	Center Freq 2.402000000 GHz
-19.2 -29.2 -39.2											- m		Start Freq 2.400500000 GHz
-49.2 -59.2 -69.2		<u>//"</u>	Var .									······································	Stop Freq 2.403500000 GHz
Cen #Re	ter 2 s B\	2.4(N 3)20 0 k	00 GHz Hz	×	#VBV	V 100 kHz	FUN	Sweep	(#Swp) 3	Span 3 .200 ms (.000 MHz 1001 pts)	CF Step 300.000 kHz <u>Auto</u> Man
1 2 3 4 5 6 7 8 9 10 11	N N N		f		2.402 01 2.401 53 2.402 48	5 GHz 5 GHz 3 GHz	9.33 dl -10.93 dl -10.90 dl	3m 3m 3m					Freq Offset 0 Hz
MSG										STATU	5		<u>[</u> []
Agiler	Agilent Spectrum Analyzer - Swept SA												
---	--	--------------	---	----------------------------------	-------------------------	-----------------------------------	----------------	-------	----------	---------------------	-----------------------	---	
<mark>ير)</mark> Cen	Center Freq 2.441000000 GHz No wet- Tric: Free Run Avg Type: Log-Pwr Type Run Type Run Typ									Frequency			
	PN0: Wride Wile Wile Wile Wile Wile Wile Wile Wil										Auto Tune		
10 d 10.8 0.800	B/div	Re	f 20.80 (Bm	2			~		-10.	-10.76 dBm	Center Freq 2.441000000 GHz	
-19.2 -29.2 -39.2			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~									Start Freq 2.439500000 GHz	
-49.2 -59.2 -69.2	<u>,</u>	ηπ.,/ °	-									Stop Freq 2.442500000 GHz	
Cen #Re	ter 2.4 s BW	4410 30 k	00 GHz Hz	~	#VBW	/ 100 kHz	-	Sweep	(#Swp) 3	Span 3 .200 ms (.000 MHz 1001 pts)	CF Step 300.000 kHz <u>Auto</u> Man	
1 2 3 4 5 6 7 8 9	N 1 N 1 N 1			2.441 01 2.440 54 2.441 48	5 GHz 1 GHz 3 GHz	9.24 df -10.79 df -11.12 df	3m 3m 3m					Freq Offset 0 Hz	
11 MSG						Ш			STATU	5	>		

Figure Channel 39:

Figure Channel 78:





Product	:	AI Camera
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2402MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1299		NA
39	2441	1299		NA
78	2480	1305		NA

Figure Channel 00:

Agilen	it Spec	ctrum	n Ana	alyzer - Swo	ept SA									
<mark>ير</mark> Cen	ter	Fre	RF q 2	50 Ω 2.40200	AC 10000 G	Hz			Avg Ty	ALIGN AUTO /pe: Log-Pwr	11:11:01 A TRA	M Mar 22, 2019	Fre	quency
10 d	PNO: Wide #Atten: 30 dB DETP NNNNN Ref Offset 0.8 dB Mkr2 2.401 349 GHz -12.57 dBm 0 dB/div Ref 20.80 dBm -12.57 dBm -											Auto Tune		
Log 10.8 0.800 -9.20						2,				3			Ce 2.4020	≥nter Freq J00000 GHz
-19.2 -29.2 -39.2	~~~	~	$\frac{1}{4}$	~~~~									2.4005	Start Freq 500000 GHz
-49.2 -59.2 -69.2			+										2.4035	Stop Freq 500000 GHz
Cen #Re	iter 2 s BV	2.40 N 30	200 0 ki	00 GHz Hz		#VB	W 100 kHz		Swee	p (#Swp)	Span 3 3.200 ms (3.000 MHz (1001 pts)	Auto 3	CF Step 300.000 kHz Man
1 3 4 5 6 7 8 9 10 11					2.402 01 2.401 32 2.402 64	2 GHz 19 GHz 18 GHz	7.75 dl -12.57 dl -12.44 dl	Bm 3m Bm 					F	re q Offset 0 Hz
MSG										STATL	JS			

Agilent Spe	ctrum Ana	lyzer - Swe	pt SA								
🛛 Center	Freq 2	50 Ω 2.44100	AC 0000 GH	lz	Tria: Eroc		Avg Type	ALIGN AUTO E: Log-Pwr	11:17:01 A	M Mar 22, 2019	Frequency
	Ref Offset 0.8 dB										Auto Tune
		20.80 t		2,~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<u>1</u>	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	3			Center Freq 2.441000000 GHz
-19.2	م محم م	<u></u>	- And					- more		-13.10 dom	Start Freq 2.439500000 GHz
-49.2 -59.2 -69.2											Stop Freq 2.442500000 GHz
Center∷ #Res B\	2.4410 N 30 ki	00 GHz Hz		#VBV	/ 100 kHz		Sweep	(#Swp) 3	Span 3 .200 ms (.000 MHz 1001 pts)	CF Step 300.000 kHz <u>Auto</u> Man
1 N 2 N 3 N 4 5 6 7	1 f 1 f 1 f		2.441 01: 2.440 34: 2.441 64:	2 GHz 9 GHz 8 GHz	6.90 dE -13.76 dE -13.21 dE	3m 3m 3m			FUNCTIO		Freq Offset 0 Hz
8 9 10 11 <								STATUS		<u> </u>	

Figure Channel 39:

Figure Channel 78:





11. EMI Reduction Method During Compliance Testing

No modification was made during testing.