

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-RFUSP33V00
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

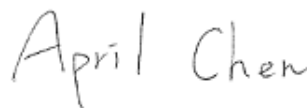
Issued Date: Apr. 19, 2019

Report No.: 1930148R-RFUSP33V00



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 E: 2016 ANSI C63.4: 2014, ANSI C63.10: 2013 789033 D02 General UNII Test Procedures New Rules v02
Test Result	Complied

Documented By :



(Senior Adm. Specialist / April Chen)

Tested By :



(Engineer / Yunche Chen)

Approved By :



(Director / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	AI Camera
Trade Name	Altek
FCC ID.	2ACQ9-16880002
Model No.	AICAMX2
Frequency Range	802.11a/n/ac-20MHz: 5180-5240MHz 802.11n/ac-40MHz: 5190-5230MHz 802.11ac-80MHz: 5210MHz
Number of Channels	802.11a/n/ac-20MHz: 4 ; 802.11n/ac-40MHz: 2 ; 802.11ac-80MHz: 1
Data Rate	802.11a: 6 - 54Mbps 802.11n: up to 150Mbps 802.11ac-80MHz: up to 433.3MHz
Channel Control	Auto
Type of Modulation	802.11a/n/ac: OFDM, BPSK, QPSK, 16QAM, 64QAM, 256QAM
Antenna type	PIFA Antenna
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	1.86 dBi For 5.15~5.25GHz

Note: 1. The antenna of EUT is conform to FCC 15.203.

802.11a/n/ac-20MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 36:	5180 MHz	Channel 40:	5200 MHz	Channel 44:	5220 MHz	Channel 48:	5240 MHz

802.11n/ac-40MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency
Channel 38:	5190 MHz	Channel 46:	5230 MHz

802.11ac-80MHz Center Working Frequency of Each Channel:

Channel	Frequency
Channel 42:	5210 MHz

Note:

1. This device is a AI Camera with a built-in WLAN,Bluetooth transceiver, this report for 5GHz WLAN.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. At result of pretests, module supports dual-channel transmission, only the worst case is shown in the report.
4. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report.
5. The modulation and bandwidth are similar for 802.11n mode for 20MHz(40MHz) and 802.11ac mode for 20MHz(40MHz), Only worst case is shown in the report.
6. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart E for Unlicensed National Information Infrastructure devices.

Test Mode	Mode 1: Transmit (802.11a-6Mbps) Mode 2: Transmit (802.11n-20BW 7.2Mbps) Mode 3: Transmit (802.11n-40BW 15Mbps) Mode 4: Transmit (802.11ac-20BW-7.2Mbps) Mode 5: Transmit (802.11ac-40BW-15Mbps) Mode 6: Transmit (802.11ac-80BW-32.5Mbps)
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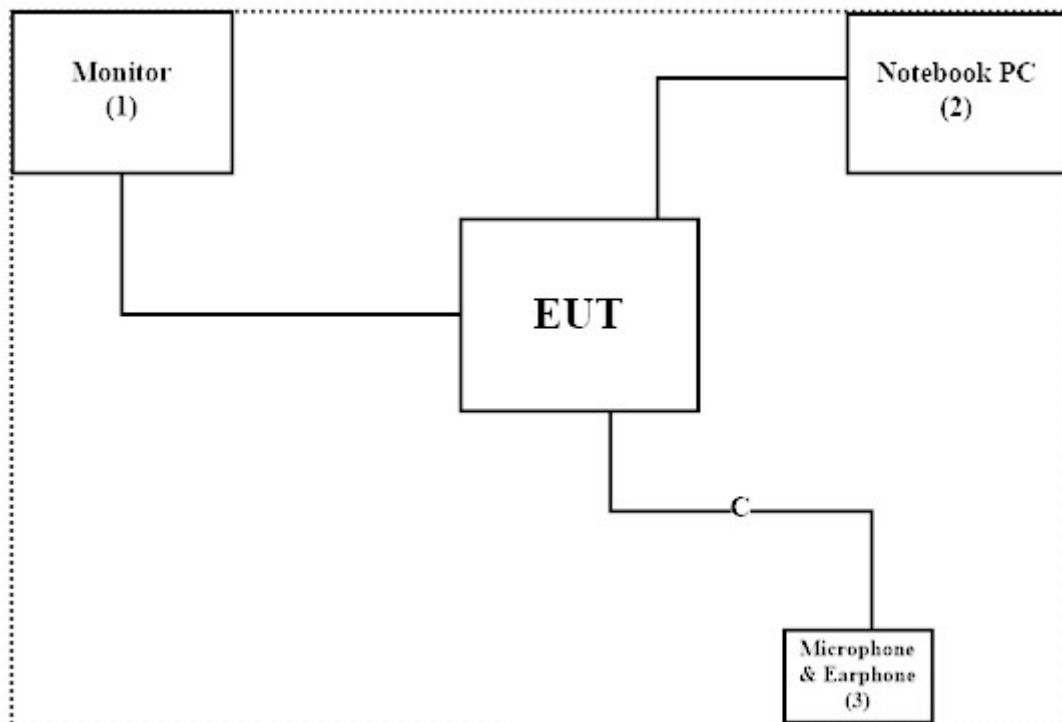
1.3. Tested System Details

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

Product	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
A USB Cable	Non-Shielded, 1.0m
B HDMI Cable	Non-Shielded, 1.5m
C 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 EUT.
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	50-65
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: http://www.dekra.com.tw/index_en.aspx

Site Description: Accredited by TAF
 Accredited Number: 3023

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 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
X	Spectrum Analyzer	Agilent	N9010A	MY53470892	2018/09/27	2019/09/26
X	Peak Power Analyzer	Keysight	8990B	MY51000410	2018/08/01	2019/07/31
X	Wideband Power Sensor	Keysight	N1923A	MY56080003	2018/07/25	2019/07/24
X	Wideband Power Sensor	Keysight	N1923A	MY56080004	2018/07/25	2019/07/24
X	EMI Test Receiver	R&S	ESCS 30	100369	2018/11/19	2019/11/18
X	LISN	R&S	ENV216	101105	2019/03/30	2020/03/29
X	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

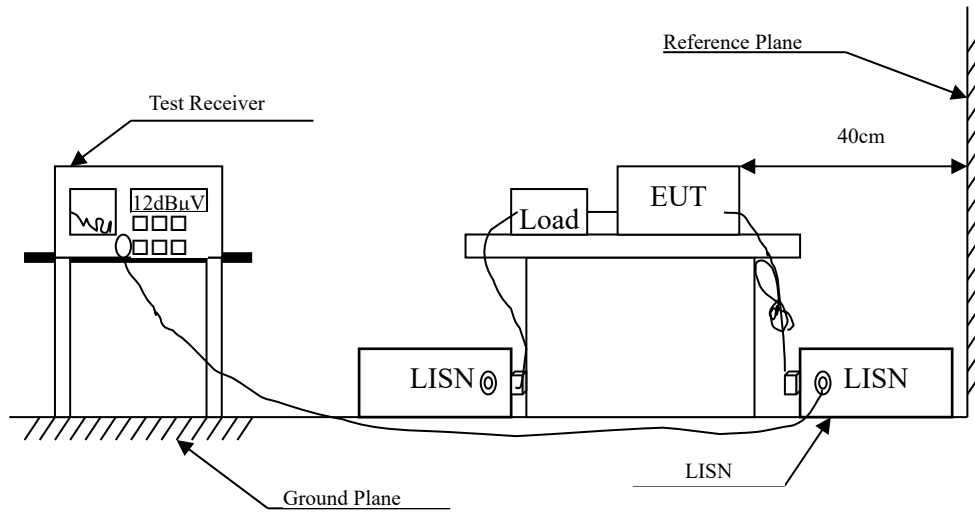
	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
X	Spectrum Analyzer	R&S	FSP40	100170	2019/3/11	2020/3/10
X	Loop Antenna	Teseq	HLA6121	37133	2017/10/13	2019/10/12
X	Bilog Antenna	Schaffner Chase	CBL6112B	2707	2018/06/24	2019/06/23
X	Coaxial Cable	DEKRA	RG 214	LC003-RG	2018/06/14	2019/06/13
X	Pre-Amplifier	Jet-Power	JPA-10M1G33	170101000330010	2018/06/14	2019/06/13
X	Horn Antenna	ETS-Lindgren	3117	00135205	2018/05/03	2019/05/02
X	Horn Antenna	SCHWARZBECK	9120D	576	2018/12/18	2019/12/17
X	Pre-Amplifier	EMCI	EMC012630SE	980210	2018/04/10	2019/04/09
X	Horn Antenna	Com-Power	AH-840	101043	2019/01/19	2020/01/18
X	Amplifier + Cable	EMCI	EMC184045SE	980370	2019/3/21	2020/3/20
X	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 :QuiTek 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 MHz	Limits	
	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 simulators 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 refers 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 of the interface cables must be changed according to ANSI C63.4:2014 on conducted measurement.

Conducted emissions were investigated 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 UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

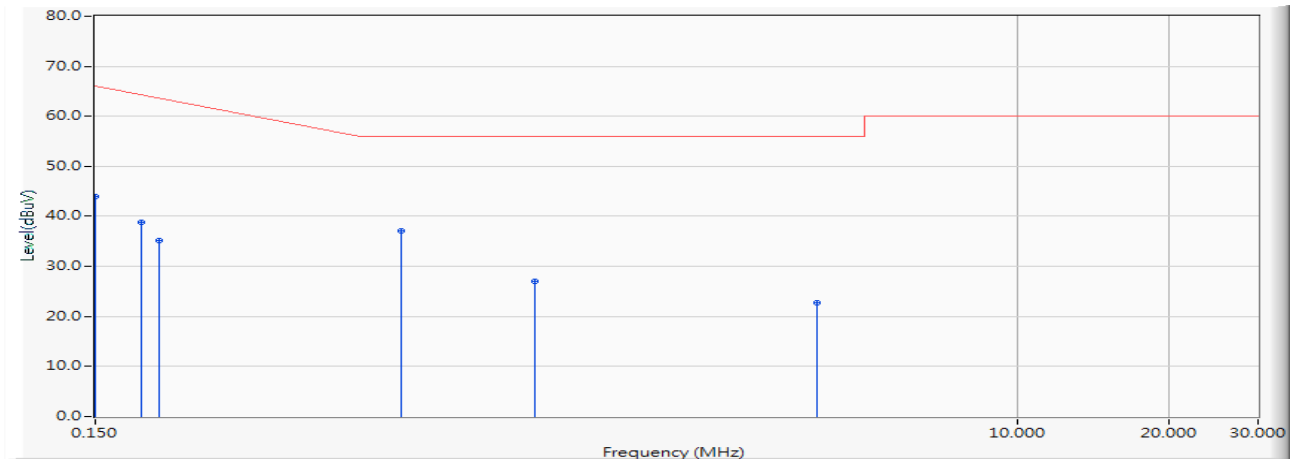
2.4. Uncertainty

± 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 6: Transmit (802.11ac-80BW-32.5Mbps) (5210MHz)

Line 1

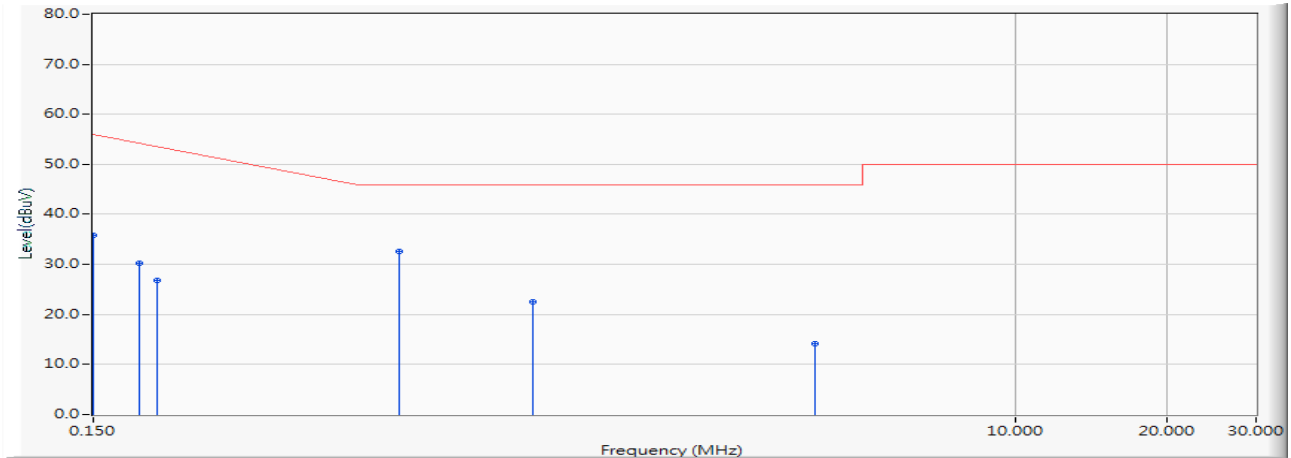


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.150	9.749	34.300	44.049	-21.951	66.000	QUASIPeAK
2		0.185	9.738	29.120	38.858	-26.142	65.000	QUASIPeAK
3		0.201	9.738	25.500	35.238	-29.305	64.543	QUASIPeAK
4	*	0.603	9.754	27.420	37.174	-18.826	56.000	QUASIPeAK
5		1.115	9.785	17.340	27.125	-28.875	56.000	QUASIPeAK
6		4.009	9.891	12.780	22.671	-33.329	56.000	QUASIPeAK

Note:

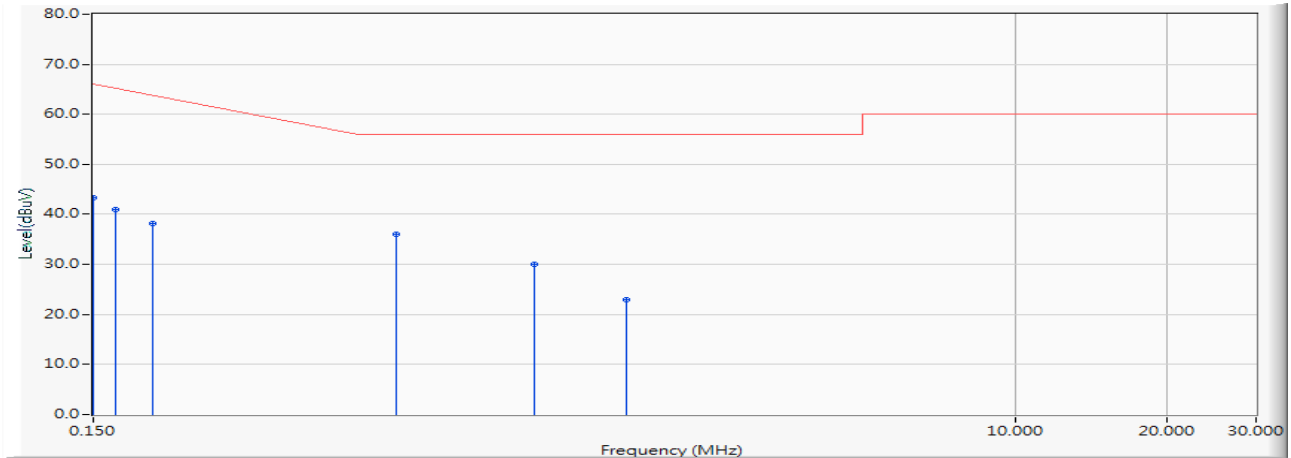
1. All Reading Levels are Quasi-Peak and average value.
2. "■" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : AI Camera
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Date : 2019/04/19
 Test Mode : Mode 6: Transmit (802.11ac-80BW-32.5Mbps) (5210MHz)

Line 1

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.150	9.749	26.010	35.759	-20.241	56.000	AVERAGE
2		0.185	9.738	20.610	30.348	-24.652	55.000	AVERAGE
3		0.201	9.738	17.000	26.738	-27.805	54.543	AVERAGE
4	*	0.603	9.754	22.870	32.624	-13.376	46.000	AVERAGE
5		1.115	9.785	12.750	22.535	-23.465	46.000	AVERAGE
6		4.009	9.891	4.340	14.231	-31.769	46.000	AVERAGE

Product : AI Camera
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Date : 2019/04/19
 Test Mode : Mode 6: Transmit (802.11ac-80BW-32.5Mbps) (5210MHz)

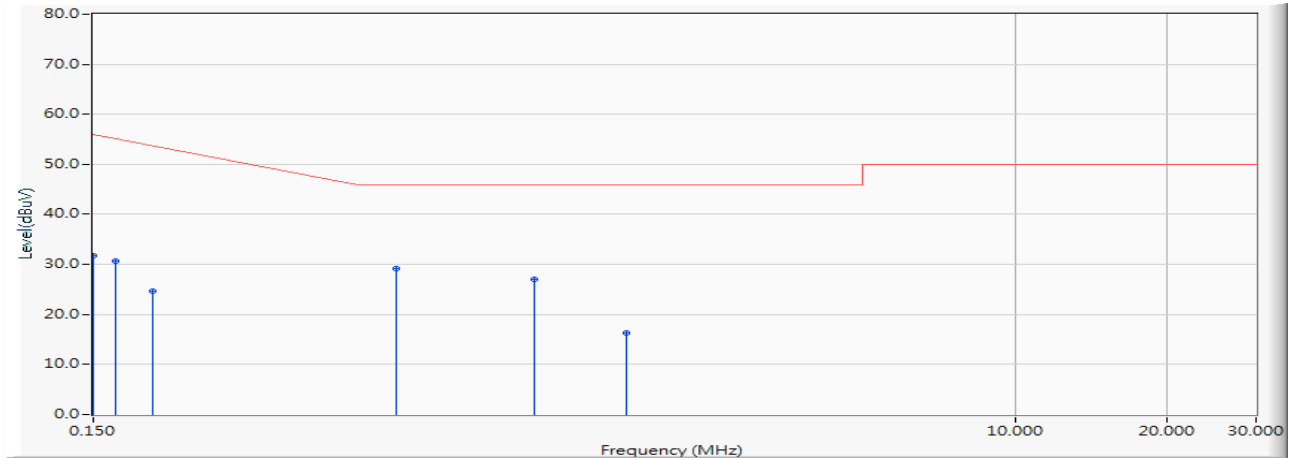
Line 2

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.150	9.739	33.600	43.339	-22.661	66.000	QUASIPeAK
2		0.166	9.736	31.200	40.936	-24.607	65.543	QUASIPeAK
3		0.197	9.738	28.540	38.278	-26.379	64.657	QUASIPeAK
4	*	0.595	9.744	26.260	36.004	-19.996	56.000	QUASIPeAK
5		1.119	9.775	20.160	29.935	-26.065	56.000	QUASIPeAK
6		1.701	9.809	13.100	22.909	-33.091	56.000	QUASIPeAK

Note:

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 6: Transmit (802.11ac-80BW-32.5Mbps) (5210MHz)

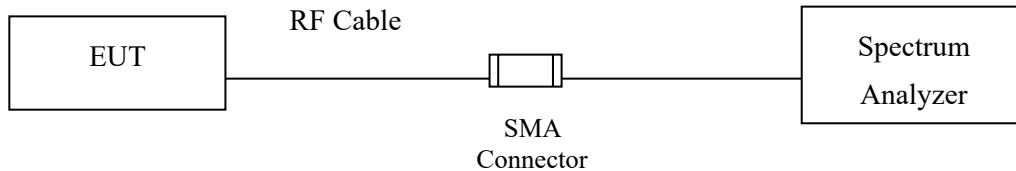
Line 2

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.150	9.739	22.010	31.749	-24.251	56.000	AVERAGE
2		0.166	9.736	20.990	30.726	-24.817	55.543	AVERAGE
3		0.197	9.738	14.850	24.588	-30.069	54.657	AVERAGE
4	*	0.595	9.744	19.320	29.064	-16.936	46.000	AVERAGE
5		1.119	9.775	17.150	26.925	-19.075	46.000	AVERAGE
6		1.701	9.809	6.390	16.199	-29.801	46.000	AVERAGE

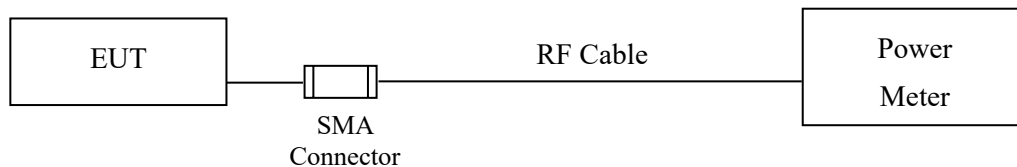
3. Maximun conducted output power

3.1. Test Setup

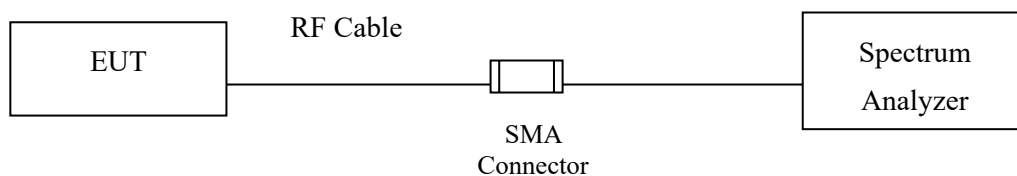
99% Occupied Bandwidth



Conduction Power Measurement (for 802.11an)



Conduction Power Measurement (for 802.11ac)



3.2. Limits

3.2.1. For the band 5.15-5.25 GHz,

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.2.2. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.2.3. For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

3.3. Test Procedure

As an alternative to FCC KDB-789033, the EUT maximum conducted output power was measured with an average power meter employing a video bandwidth greater the 6dB BW of the emission under test. Maximum conducted output power was read directly from the meter across all data rates, and across three channels within each sub-band. Special care was used to make sure that the EUT was transmitting in continuous mode. This method exceeds the limitations of FCC KDB-789033, and provides more accurate measurements.

802.11an (BW $\leq$ 40MHz) Maximum conducted output power using KDB 789033 section E)3)b)
Method PM-G (Measurement using a gated RF average power meter)

Note: the power meter have a video bandwidth that is greater than or equal to the measurement bandwidth, (Anritsu/ MA2411B video bandwidth: 65MHz)

802.11ac (BW=80MHz) Maximum conducted output power using KDB 789033 section E)2)b)
Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep).

When transmitted signals consist of two or more non-contiguous spectrum segments (e.g., 80+80 MHz mode) or when a single spectrum segment of a transmission crosses the boundary between two adjacent U-NII bands, KDB 644545 D03 section D) procedure is used for measurements.

3.4. Uncertainty

± 1.62 dB

3.5. Test Result of Maximum conducted output power

Product : AI Camera
 Test Item : Maximum conducted output power
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11a-6Mbps)

Cable loss=1dB		Maximum conducted output power							
Channel No.	Frequency (MHz)	Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
		Measurement Level (dBm)							
36	5180	11.61	--	--	--	--	--	--	--
44	5220	11.56	11.4	11.28	11.14	11.08	11.02	10.91	10.82
48	5240	11.53	--	--	--	--	--	--	--

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Maximum conducted output power Measurement:

Channel No	Frequency Range (MHz)	99% Bandwidth (MHz)	Output Power (dBm)	Output Power Limit	
				(dBm)	dBm+10log(BW)
36	5180	--	11.61	30	--
44	5220	--	11.56	30	--
48	5240	--	11.53	30	--

Note: Power Output Value =Reading value on average power meter + cable loss

Product : AI Camera
 Test Item : Maximum conducted output power
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps)

Cable loss=1dB		Maximum conducted output power							
Channel No.	Frequency (MHz)	Data Rate (Mbps)							
		7.2	14.4	21.7	28.9	43.3	57.8	65	72.2
		Measurement Level (dBm)							
36	5180	11.81	--	--	--	--	--	--	--
44	5220	11.72	11.64	11.48	11.35	11.21	11.05	10.97	10.86
48	5240	11.89	--	--	--	--	--	--	--

Maximum conducted output power Measurement:

Channel No	Frequency Range (MHz)	99% Bandwidth (MHz)	Output Power (dBm)	Output Power Limit	
				(dBm)	dBm+10log(BW)
36	5180	--	11.81	30	--
44	5220	--	11.72	30	--
48	5240	--	11.89	30	--

Note: Power Output Value =Reading value on average power meter + cable loss

Product : AI Camera
 Test Item : Maximum conducted output power
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n-40BW 15Mbps)

Cable loss=1dB		Maximum conducted output power							
Channel No.	Frequency (MHz)	Data Rate (Mbps)							
		15	30	45	60	90	120	135	150
		Measurement Level (dBm)							
38	5190	9.55	--	--	--	--	--	--	--
46	5230	9.54	9.46	9.28	9.18	9.11	9.05	8.88	8.78

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Maximum conducted output power Measurement:

Channel No	Frequency Range (MHz)	99% Bandwidth (MHz)	Output Power (dBm)	Output Power Limit	
				(dBm)	dBm+10log(BW)
38	5190	--	9.55	30	--
46	5230	--	9.54	30	--

Note: Power Output Value =Reading value on average power meter + cable loss

Product : AI Camera
 Test Item : Maximum conducted output power
 Test Site : No.3 OATS
 Test Mode : Mode 6: Transmit (802.11ac-80BW-32.5Mbps)

Cable loss=1dB		Maximum conducted output power									
Channel No	Frequency (MHz)	Data Rate (Mbps)									
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	VTH9
42	5210	7.81	7.67	7.51	7.34	7.17	7.1	7.04	6.97	6.84	6.68

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

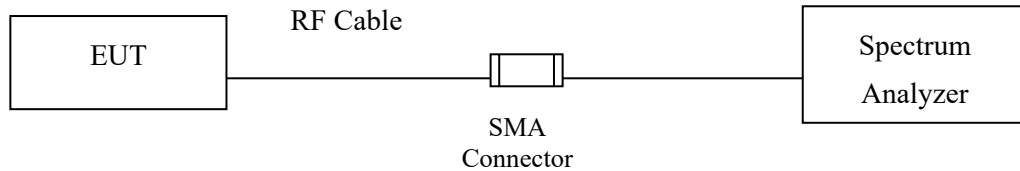
Maximum conducted output power Measurement

Channel No	Frequency Range	99% Bandwidth	Output Power	Output Power Limit		Result
	(MHz)	(MHz)	(dBm)	(dBm)	dBm+10log(BW)	
42	5210	--	7.81	30	--	Pass

Note: Power Output Value =Reading value on average power meter + cable loss

4. Peak Power Spectral Density

4.1. Test Setup



4.2. Limits

- (1) For the band 5.15-5.25 GHz,
 - (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
 - (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
 - (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
 - (iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.+
- (2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

- (3) For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

4.3. Test Procedure

The EUT was setup to ANSI C63.10, 2009; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

The Peak Power Spectral Density using KDB 789033 section F) procedure, Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer.

SA-1 method is selected to run the test.

For the band 5.725-5.85 GHz, Scale the observed power level to an equivalent value in 500 kHz by adjusting (increase) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(500\text{ kHz}/100\text{ kHz}) = 6.98\text{ dB}$.

4.4. Uncertainty

$\pm 1.62\text{ dB}$

4.5. Test Result of Peak Power Spectral Density

Product : AI Camera
Test Item : Peak Power Spectral Density
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11a-6Mbps)

Channel Number	Frequency (MHz)	Data Rata (Mbps)	Measurement Level (dBm)	Required Limit (dBm)	Result
36	5180	6	-0.890	11	Pass
44	5220	6	-0.760	11	Pass
48	5240	6	-0.710	11	Pass

Note: Total PPSD Value = Measurement Level + Duty Factor

Keysight Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 04:45:30 PM Mar 16, 2019

Center Freq 5.18000000 GHz #Avg Type: RMS

PNO: Fast Trig: Free Run
IFGain:Low #Atten: 30 dB

TRACE 1 2 3 4 5 6
TYPE A W W W W W W
DET A N N N N N N

Frequency

Auto Tune

Center Freq
5.180000000 GHz

Start Freq
5.155000000 GHz

Stop Freq
5.205000000 GHz

CF Step
5.000000 MHz
Auto Man

Freq Offset
0 Hz

10 dB/div
Log

Ref Offset 1.8 dB
Ref 21.80 dBm

Mkr1 5.178 70 GHz
-0.89 dBm

11.8
1.80
-8.20
-18.2
-28.2
-38.2
-48.2
-58.2
-68.2

Center 5.18000 GHz Span 50.00 MHz
#Res BW 1.0 MHz #VBW 3.0 MHz Sweep (#Swp) 1.000 ms (1001 pts)

MSG STATUS

Keysight Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 05:02:43 PM Mar 16, 2019

Center Freq 5.22000000 GHz PNO: Fast Trig: Free Run #Avg Type: RMS

TYPE 1 2 3 4 5 6
DET A N N N N N

Ref Offset 1.8 dB
Ref 21.80 dBm

Mkr1 5.220 95 GHz
-0.76 dBm

10 dB/div
Log

Center 5.22000 GHz
#Res BW 1.0 MHz

#VBW 3.0 MHz

Span 50.00 MHz
Sweep (#Swp) 1,000 ms (1001 pts)

Frequency

Auto Tune

Center Freq
5.22000000 GHz

Start Freq
5.195000000 GHz

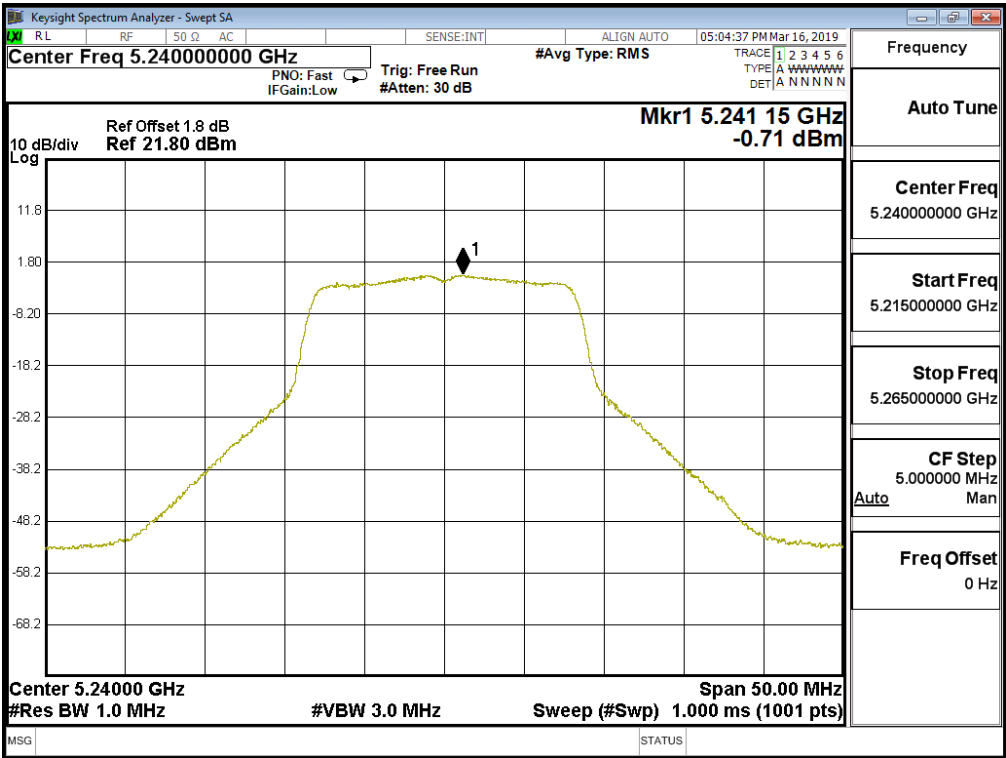
Stop Freq
5.245000000 GHz

CF Step
5.000000 MHz
Auto Man

Freq Offset
0 Hz

MSG STATUS

Channel 48:

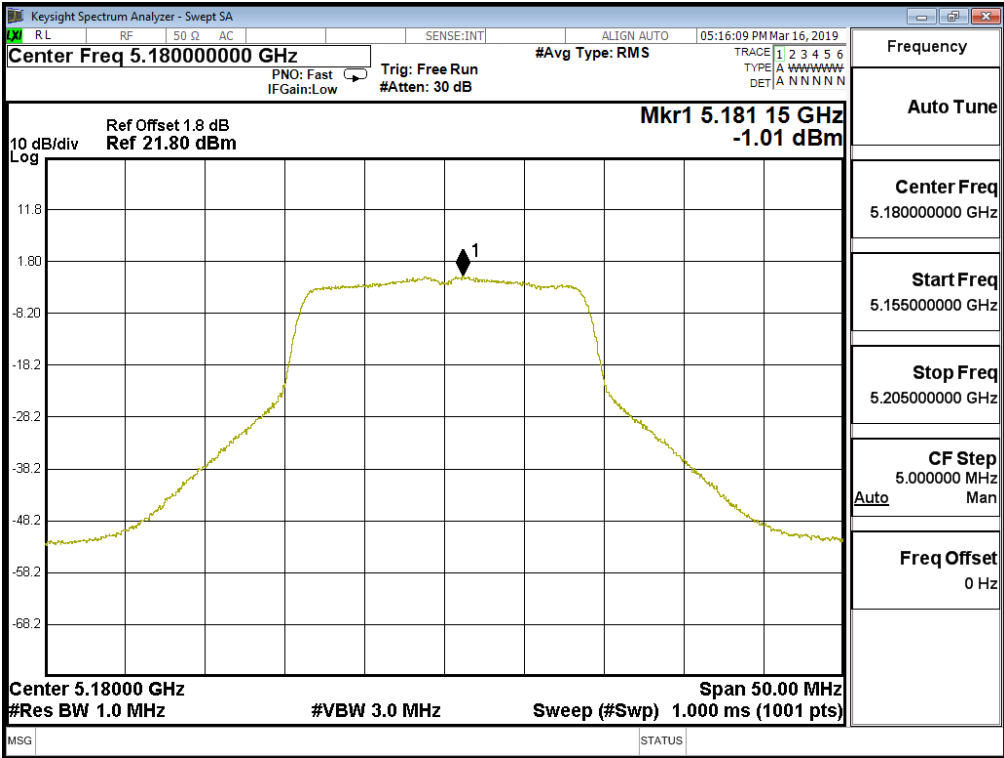


Product : AI Camera
Test Item : Peak Power Spectral Density
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps)

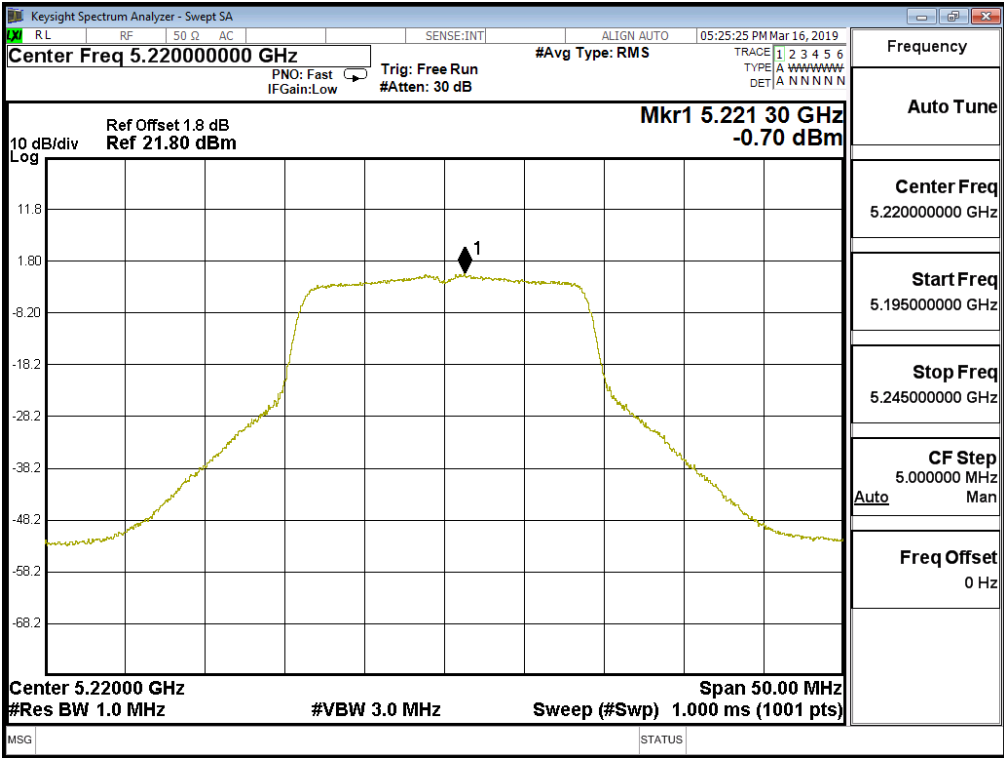
Channel Number	Frequency (MHz)	Data Rata (Mbps)	Measurement Level (dBm)	Required Limit (dBm)	Result
36	5180	6	-1.010	11	Pass
44	5220	6	-0.700	11	Pass
48	5240	6	-0.460	11	Pass

Note: Total PPSD Value = Measurement Level + Duty Factor

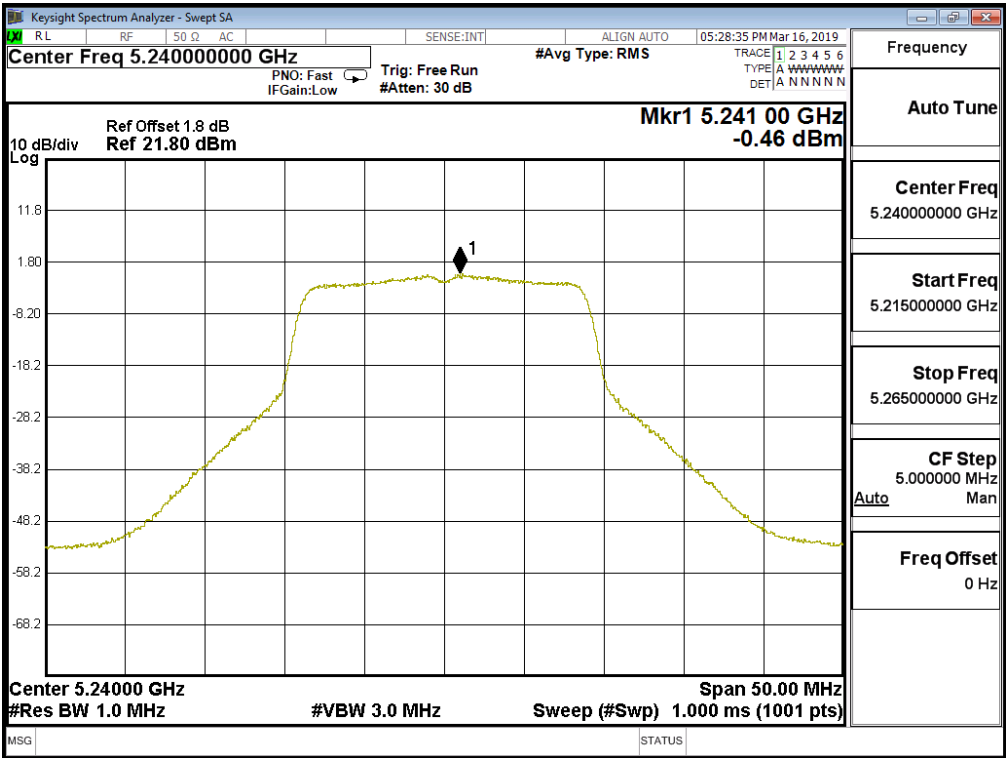
Channel 36:



Channel 44:



Channel 48:

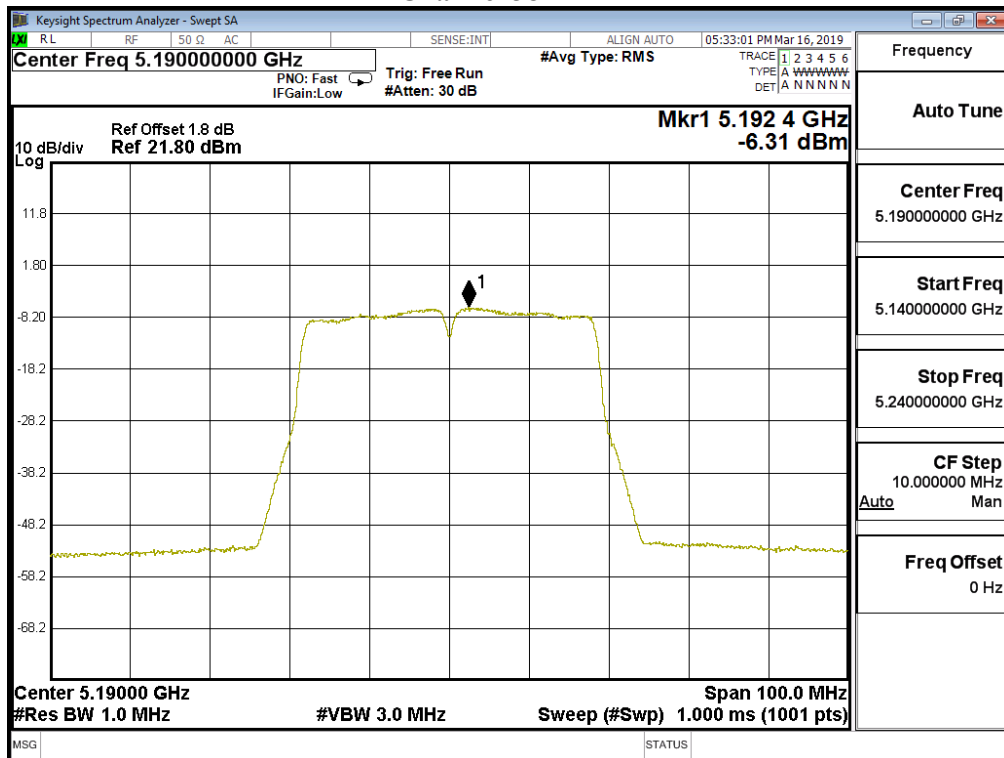


Product : AI Camera
Test Item : Peak Power Spectral Density
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n-40BW 15Mbps)

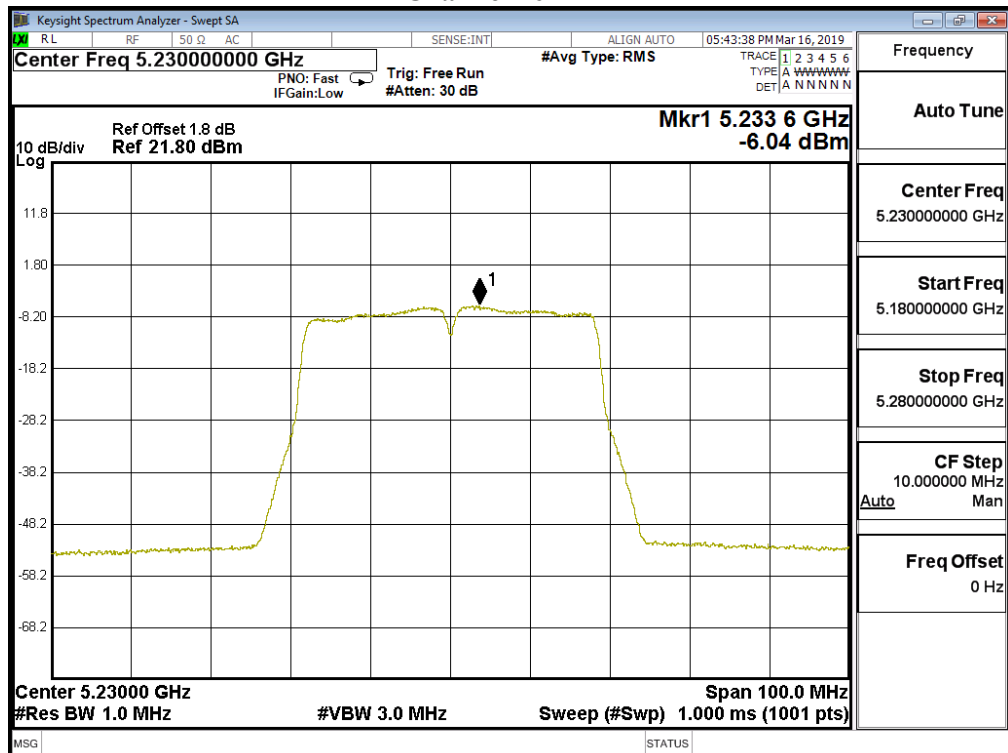
Channel Number	Frequency (MHz)	Data Rata (Mbps)	Measurement Level (dBm)	Required Limit (dBm)	Result
38	5190	6	-6.310	11	Pass
46	5230	6	-6.040	11	Pass

Note: Total PPSD Value = Measurement Level + Duty Factor

Channel 38



Channel 46

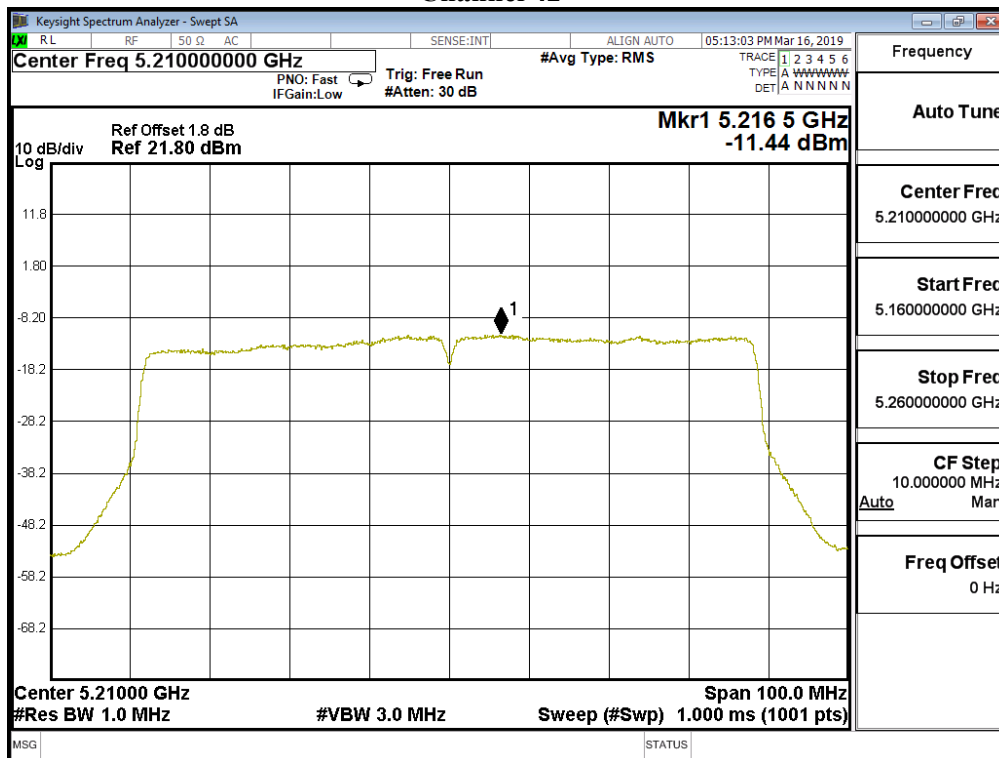


Product : AI Camera
 Test Item : Peak Power Spectral Density
 Test Site : No.3 OATS
 Test Mode : Mode 6: Transmit (802.11ac-80BW-32.5Mbps)

Channel Number	Frequency (MHz)	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)	Result
42	5210	-11.440	--	-11.440	<17

Note: Total PPSD Value = PPSD value + Duty Factor + BWCF.

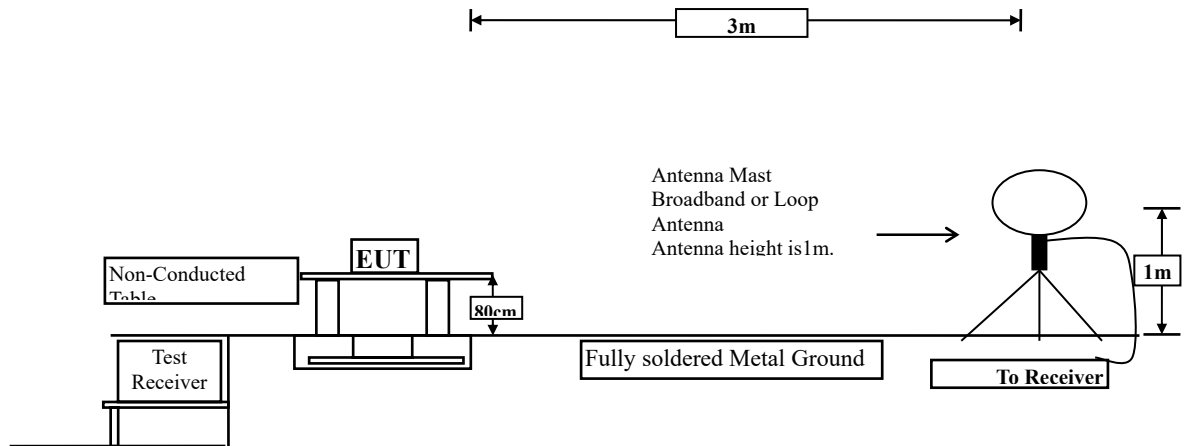
Channel 42



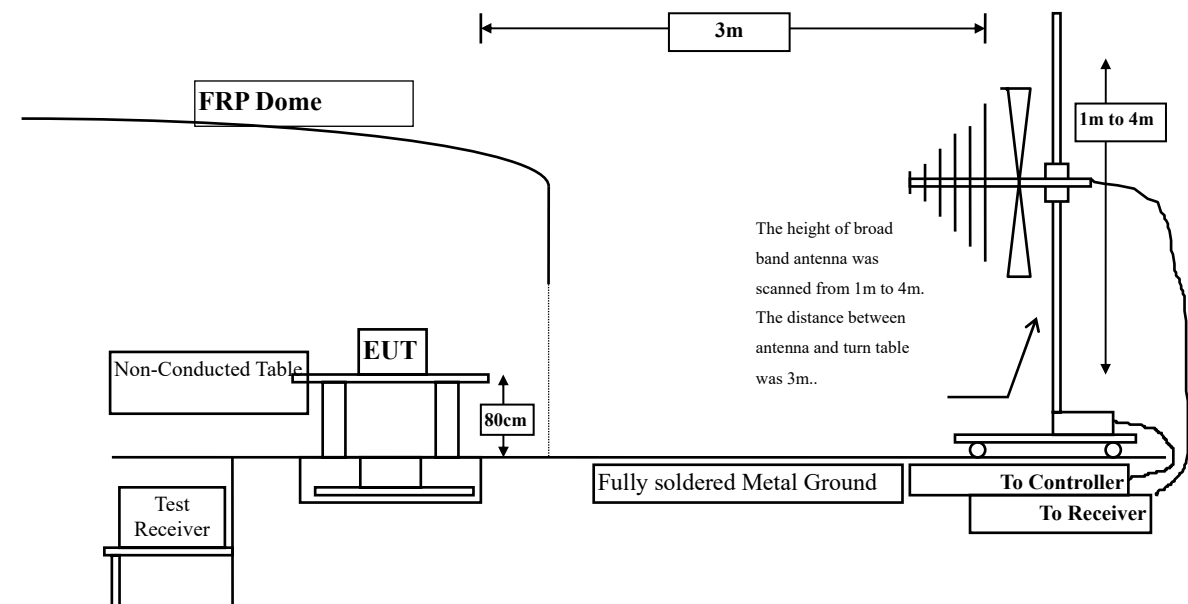
5. Radiated Emission

5.1. Test Setup

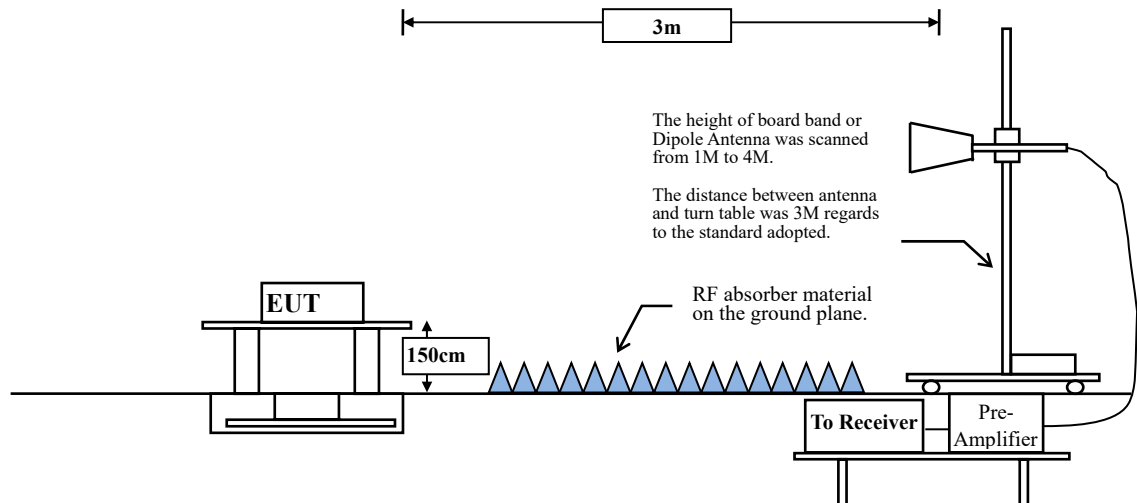
Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



5.2. 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(a) Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (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: E field strength (dB μ V/m) = 20 log E field strength (uV/m)

5.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested according to FCC KDB-789033 test procedure for compliance to FCC 47CFR 15. 407 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 from 9kHz - 10th Harmonic of fundamental was investigated.

RBW and VBW Parameter setting:

According to KDB 789033 section II.G.5 Procedure for Unwanted Maximum Emissions
Measurements above 1000 MHz.

RBW = 1MHz.

VBW $\geq$ 3MHz.

According to KDB 789033 section II.G.6 Procedures for Average Unwanted Emissions
Measurements above 1000 MHz.

RBW = 1MHz.

VBW = 10Hz, when duty cycle $\geq$ 98 %

VBW $\geq$ 1/T, when duty cycle < 98 %

(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

5GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11 a	95.19	2.0072	498	500
802.11 n20	97.76	1.8986	527	1000
802.11 n40	91.91	0.9058	1104	2000
802.11 ac80	82.61	0.4130	2421	3000

Note: Duty Cycle Refer to Section 8

5.4. Uncertainty

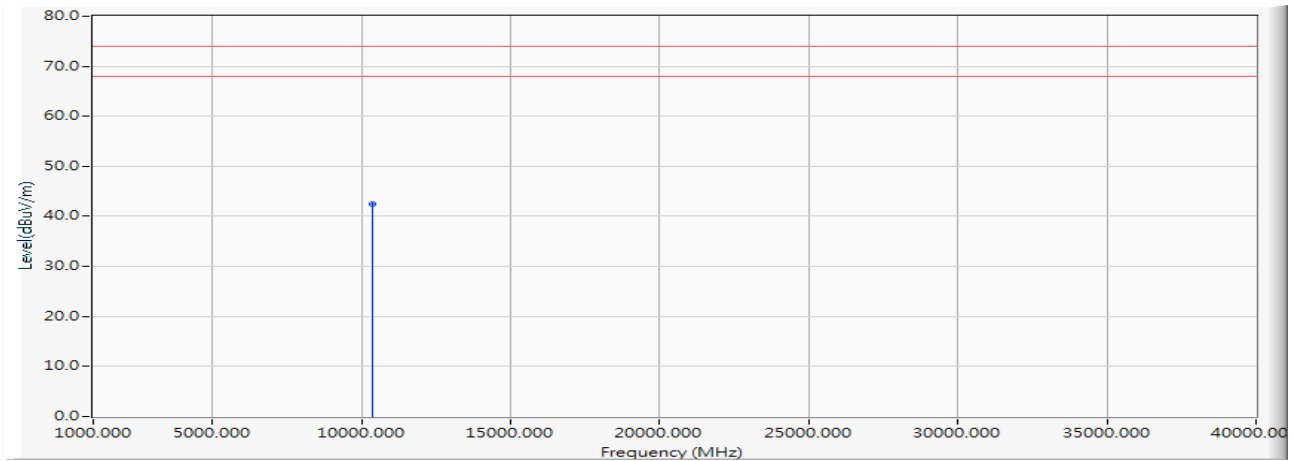
$\pm$ 4.08 dB above 1GHz

$\pm$ 4.22 dB below 1GHz

5.5. Test Result of Radiated Emission

Product : AI Camera
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2019/03/25
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5180MHz)

Horizontal

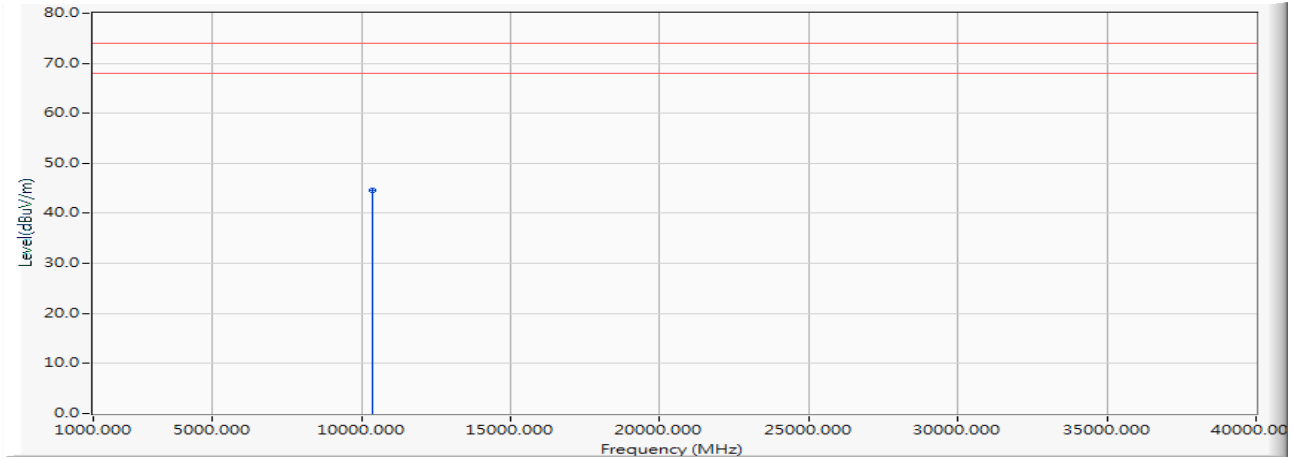


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	10360.000	16.135	26.371	42.506	-31.494	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. 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 Data
 Test Site : No.3 OATS
 Test Date : 2019/03/25
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5180MHz)

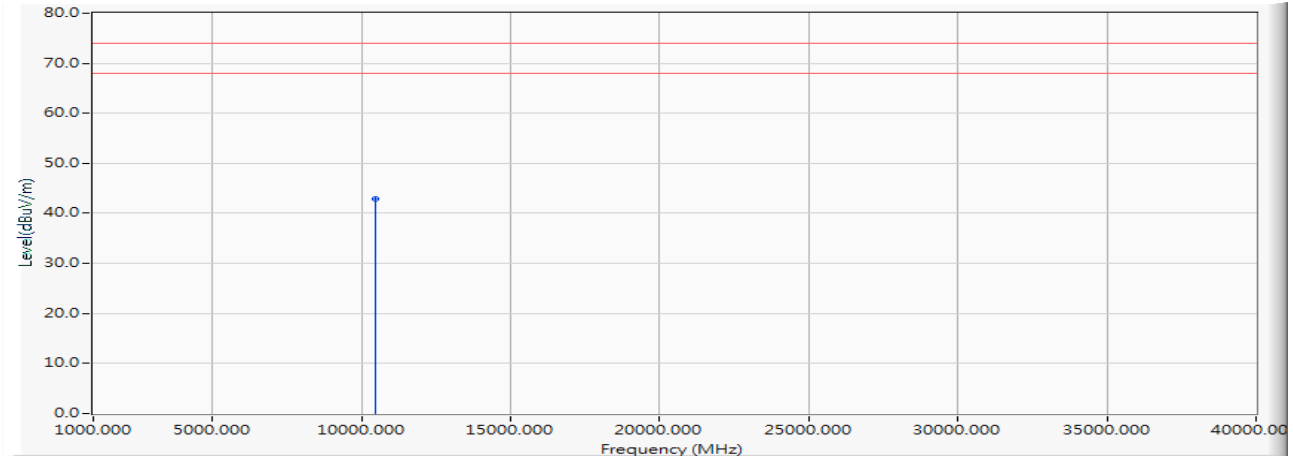
Vertical

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	10360.000	16.135	28.375	44.510	-29.490	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. 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 Data
 Test Site : No.3 OATS
 Test Date : 2019/03/25
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5220MHz)

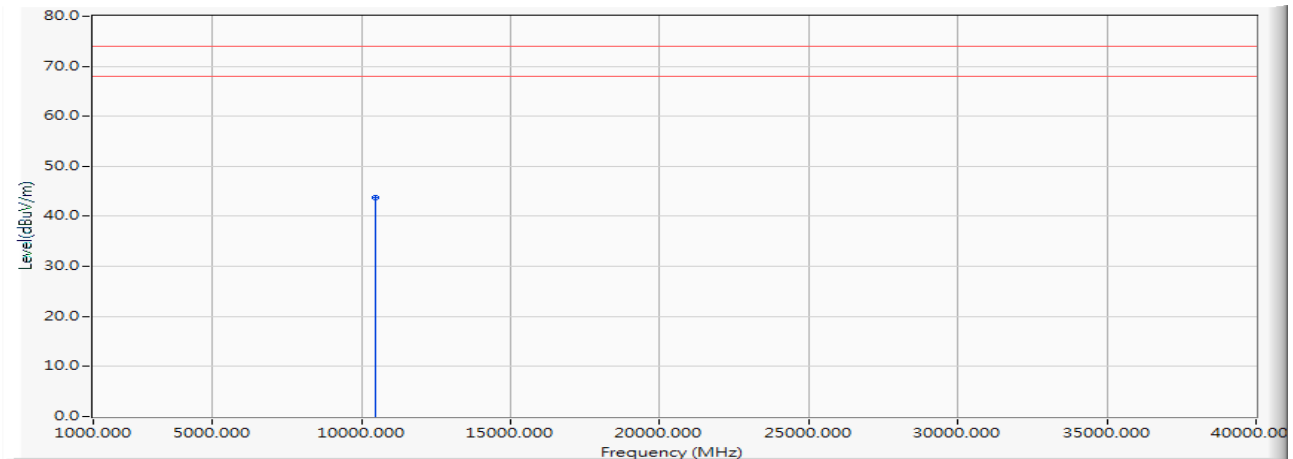
Horizontal

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	10440.000	16.197	26.745	42.942	-31.058	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. 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 Data
 Test Site : No.3 OATS
 Test Date : 2019/03/25
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5220MHz)

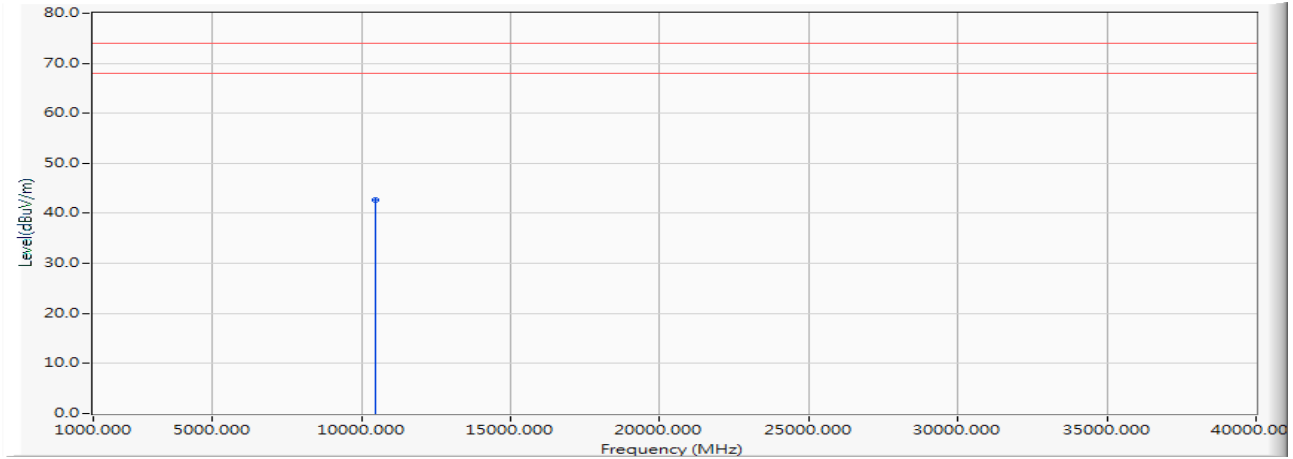
Vertical

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	10440.000	16.197	27.658	43.855	-30.145	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. 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 Data
 Test Site : No.3 OATS
 Test Date : 2019/03/25
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5240MHz)

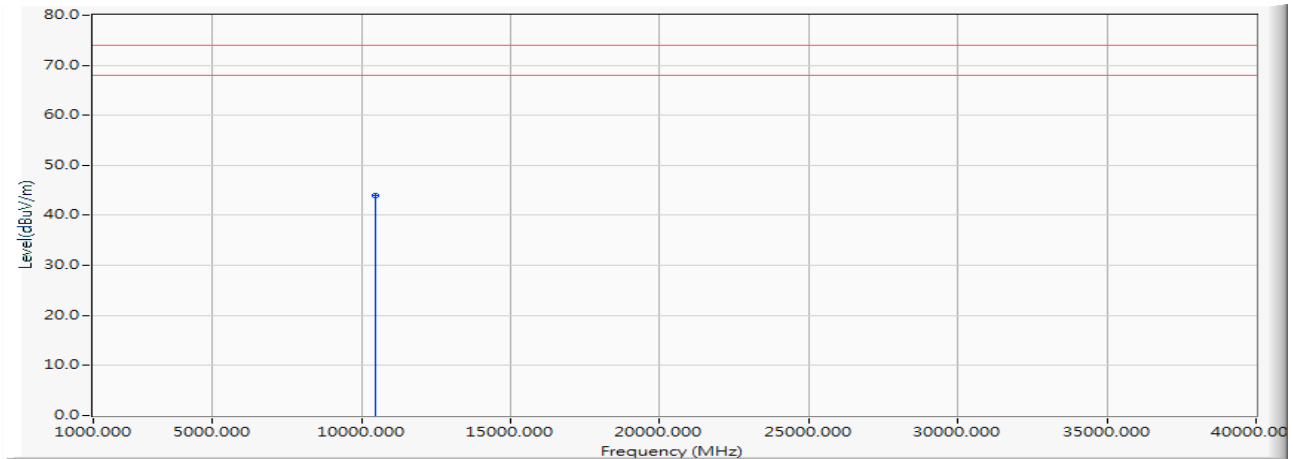
Horizontal

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	10480.000	16.173	26.511	42.684	-31.316	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. 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 Data
 Test Site : No.3 OATS
 Test Date : 2019/03/25
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5240MHz)

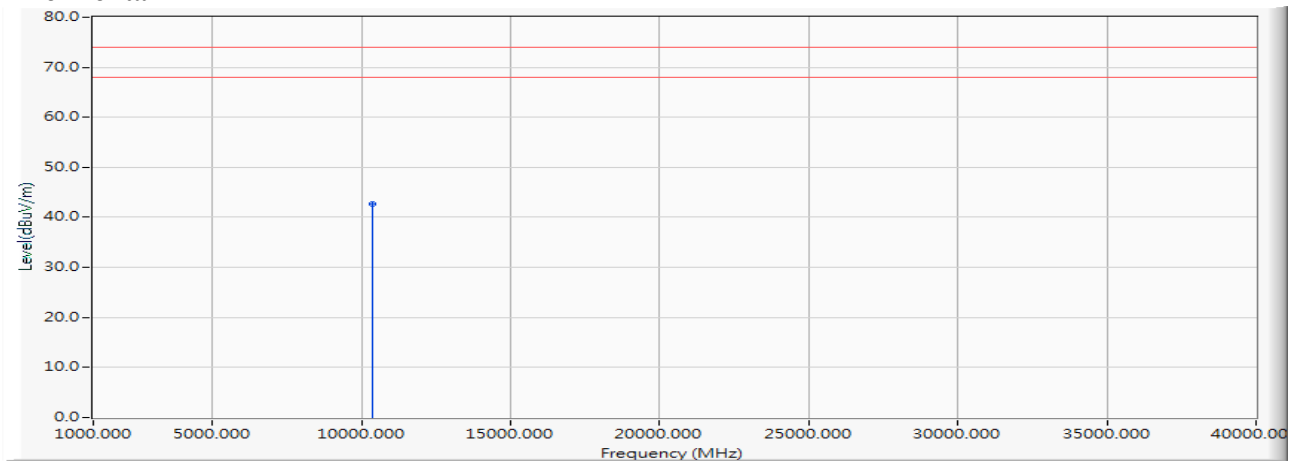
Vertical

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Measure Level (dB μ V/m)	Margin (dB)	Limit (dB μ V/m)	Detector Type
1	*	10480.000	16.173	27.707	43.880	-30.120	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. 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 Data
 Test Site : No.3 OATS
 Test Date : 2019/03/25
 Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5180MHz)

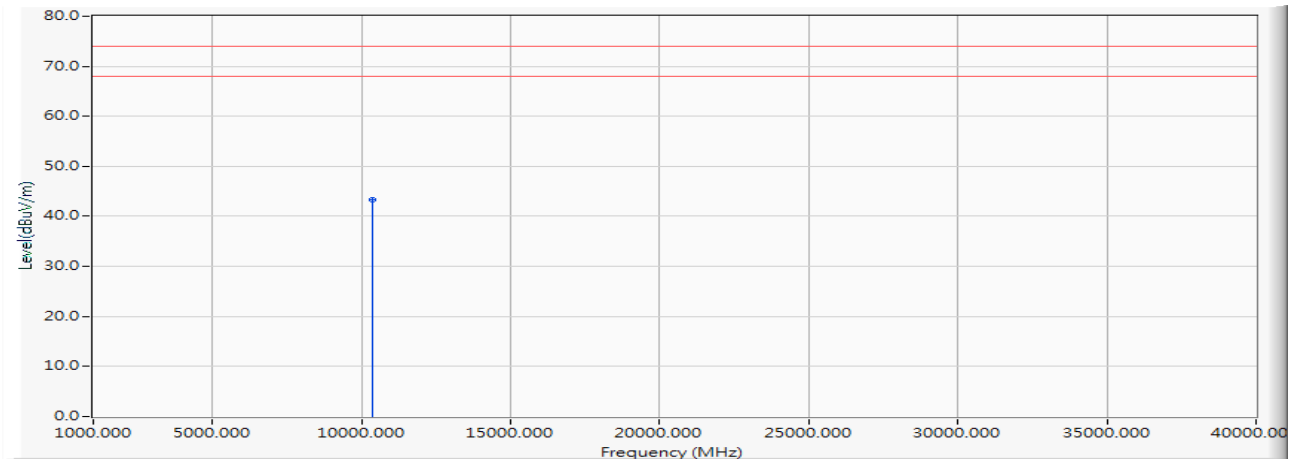
Horizontal

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	10360.000	16.135	26.481	42.616	-31.384	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. 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 Data
 Test Site : No.3 OATS
 Test Date : 2019/03/25
 Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5180MHz)

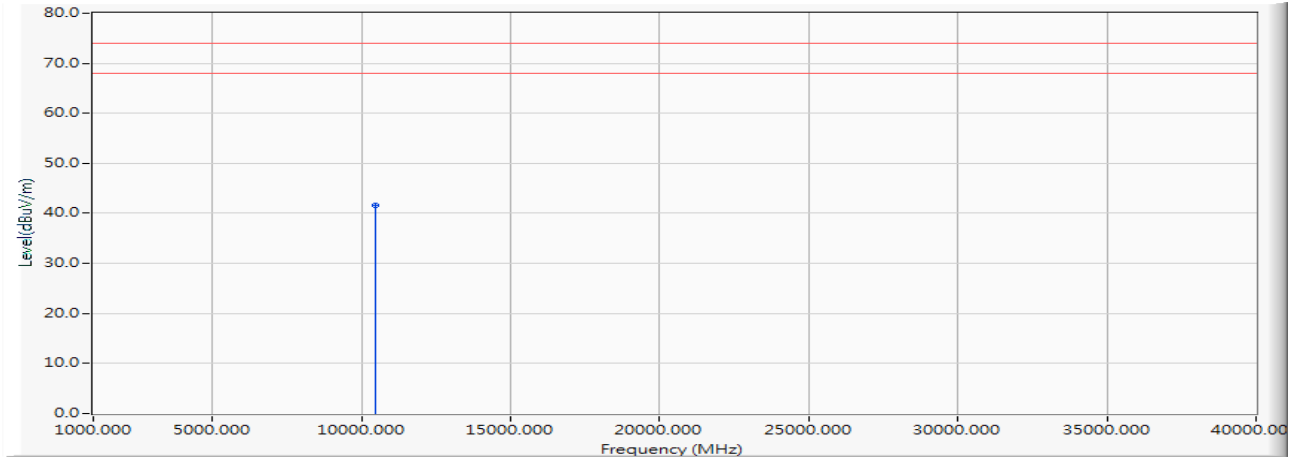
Vertical

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	10360.000	16.135	27.125	43.260	-30.740	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. 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 Data
 Test Site : No.3 OATS
 Test Date : 2019/03/25
 Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5220MHz)

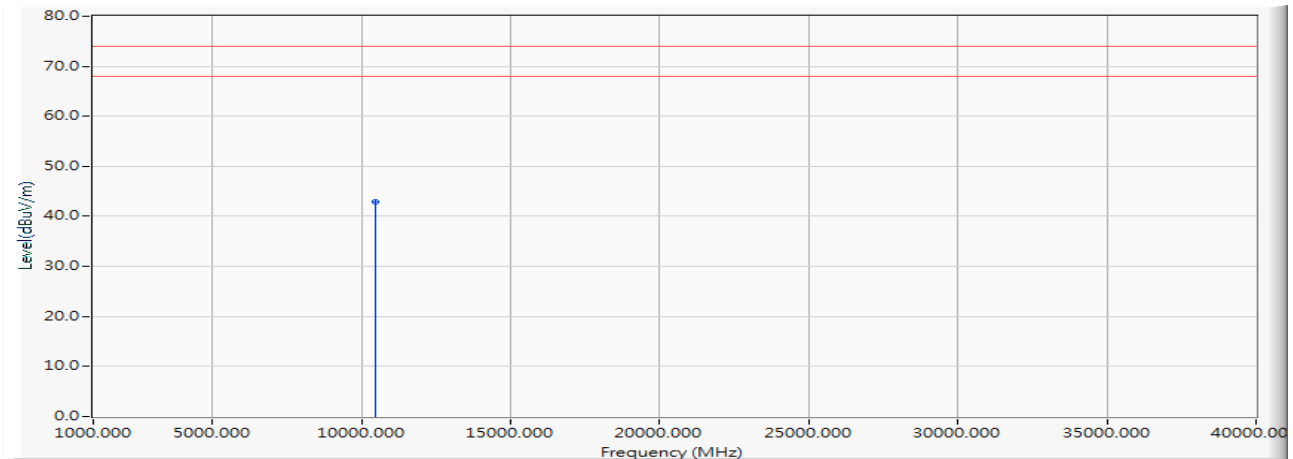
Horizontal

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	10440.000	16.197	25.405	41.602	-32.398	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. 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 Data
 Test Site : No.3 OATS
 Test Date : 2019/03/25
 Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5220MHz)

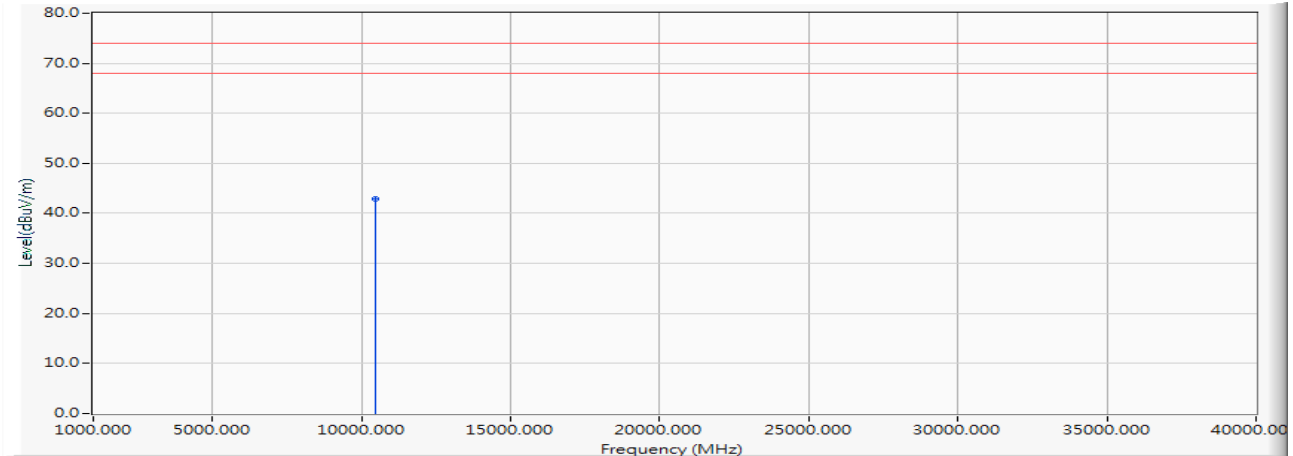
Vertical

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	10440.000	16.197	26.718	42.915	-31.085	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. 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 Data
 Test Site : No.3 OATS
 Test Date : 2019/03/25
 Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5240MHz)

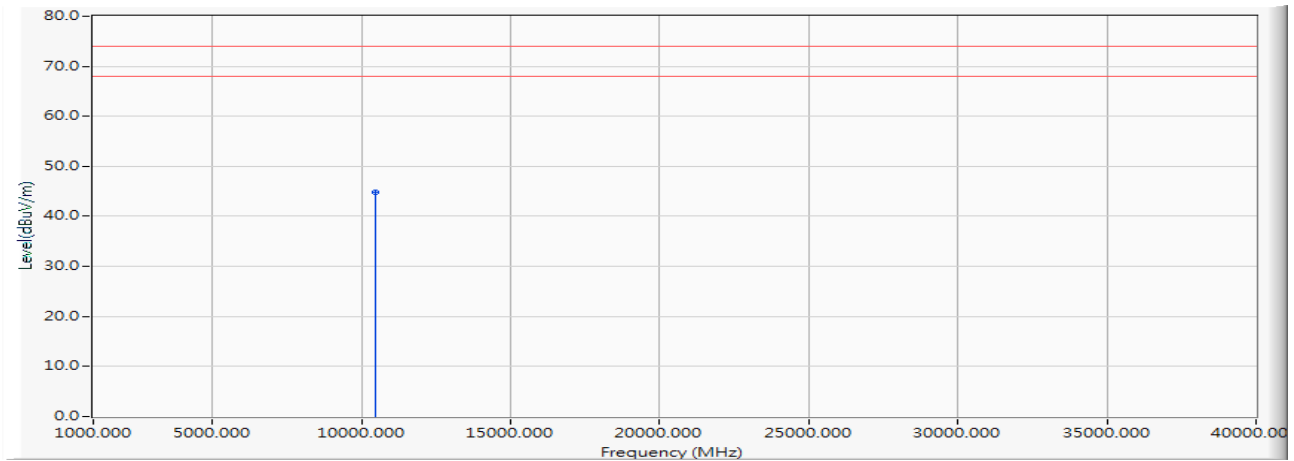
Horizontal

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	10480.000	16.173	26.741	42.914	-31.086	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. 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 Data
 Test Site : No.3 OATS
 Test Date : 2019/03/25
 Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5240MHz)

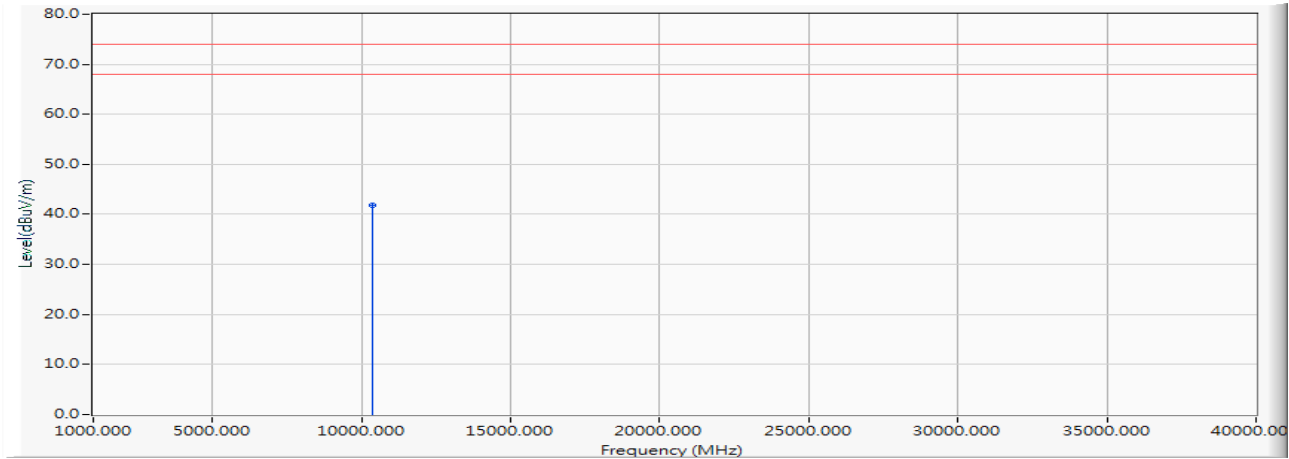
Vertical

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	10480.000	16.173	28.547	44.720	-29.280	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. 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 Data
 Test Site : No.3 OATS
 Test Date : 2019/03/25
 Test Mode : Mode 3: Transmit (802.11n-40BW 15Mbps) (5190MHz)

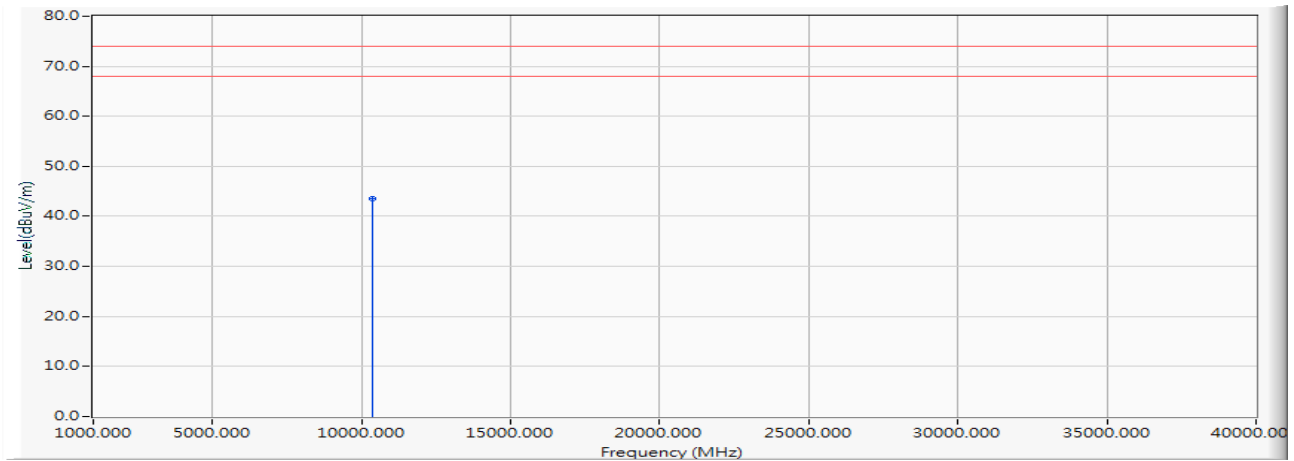
Horizontal

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	10380.000	16.325	25.482	41.807	-32.193	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. 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 Data
 Test Site : No.3 OATS
 Test Date : 2019/03/25
 Test Mode : Mode 3: Transmit (802.11n-40BW 15Mbps) (5190MHz)

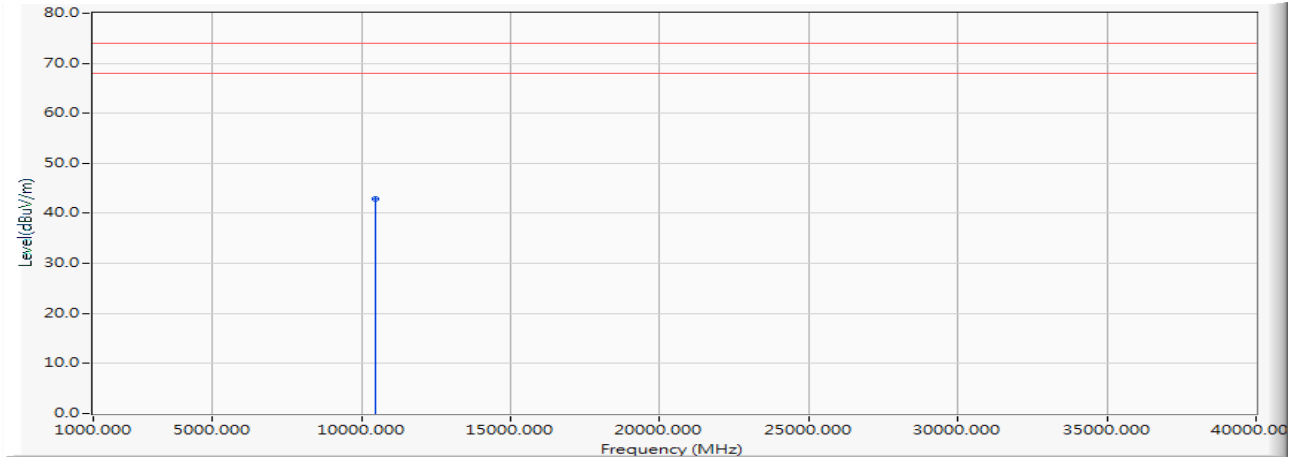
Vertical

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	10380.000	16.325	27.200	43.525	-30.475	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. 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 Data
 Test Site : No.3 OATS
 Test Date : 2019/03/25
 Test Mode : Mode 3: Transmit (802.11n-40BW 15Mbps) (5230MHz)

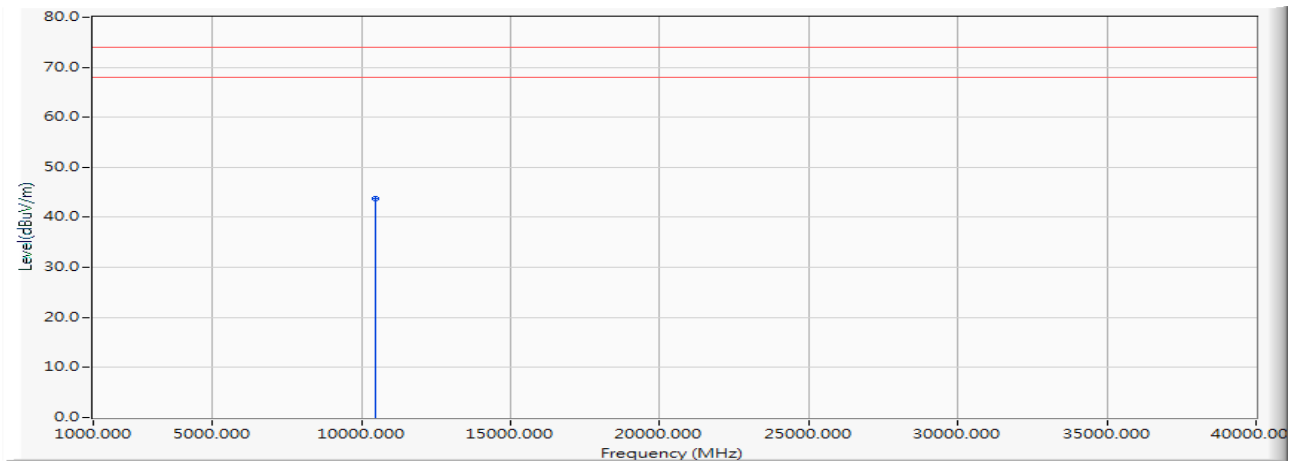
Horizontal

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	10460.000	16.253	26.580	42.833	-31.167	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. 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 Data
 Test Site : No.3 OATS
 Test Date : 2019/03/25
 Test Mode : Mode 3: Transmit (802.11n-40BW 15Mbps) (5230MHz)

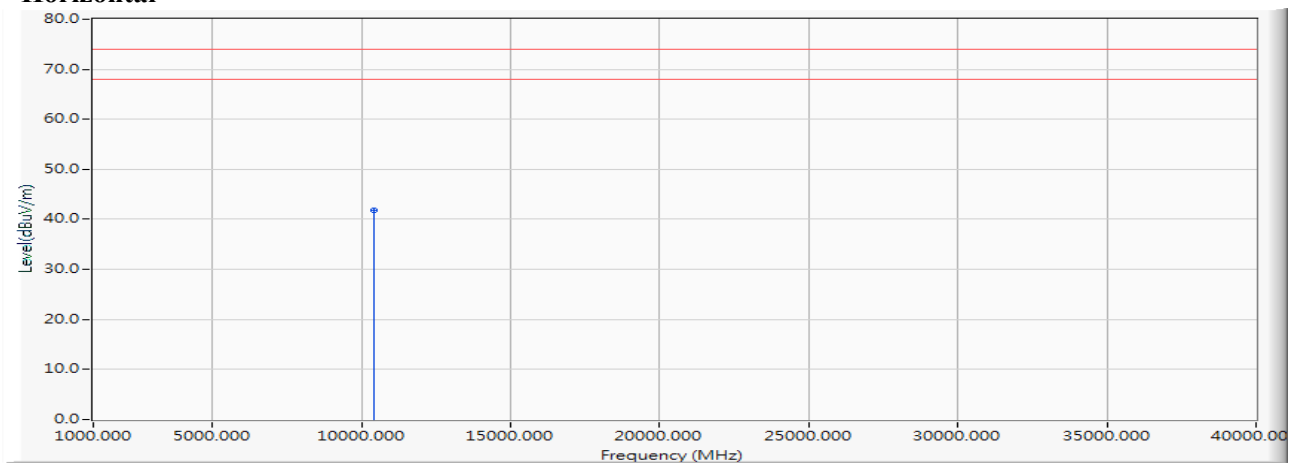
Vertical

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	10460.000	16.253	27.405	43.658	-30.342	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. 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 Data
 Test Site : No.3 OATS
 Test Date : 2019/03/25
 Test Mode : Mode 6: Transmit (802.11ac-80BW-32.5Mbps) (5210MHz)

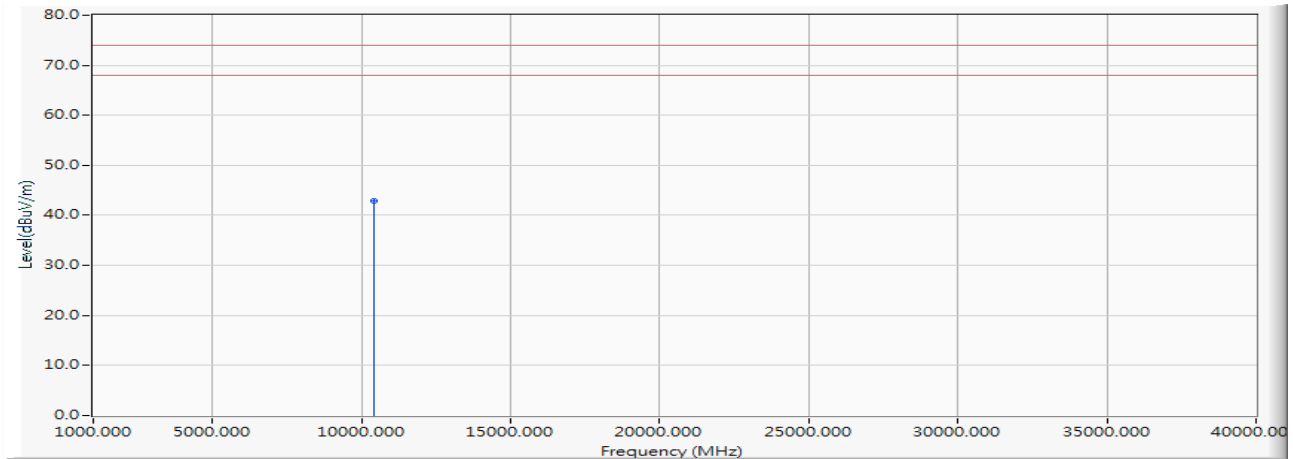
Horizontal

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	10420.000	16.519	25.259	41.779	-32.221	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. 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 Data
 Test Site : No.3 OATS
 Test Date : 2019/03/25
 Test Mode : Mode 6: Transmit (802.11ac-80BW-32.5Mbps) (5210MHz)

Vertical

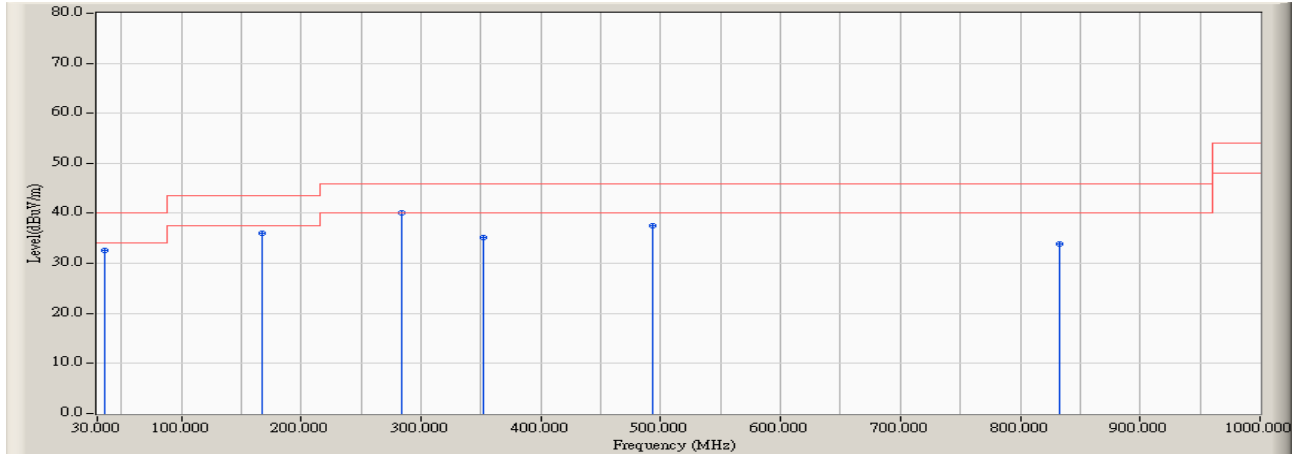
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	10420.000	16.519	26.352	42.872	-31.128	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. 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 (802.11a-6Mbps) (5220MHz)

Horizontal

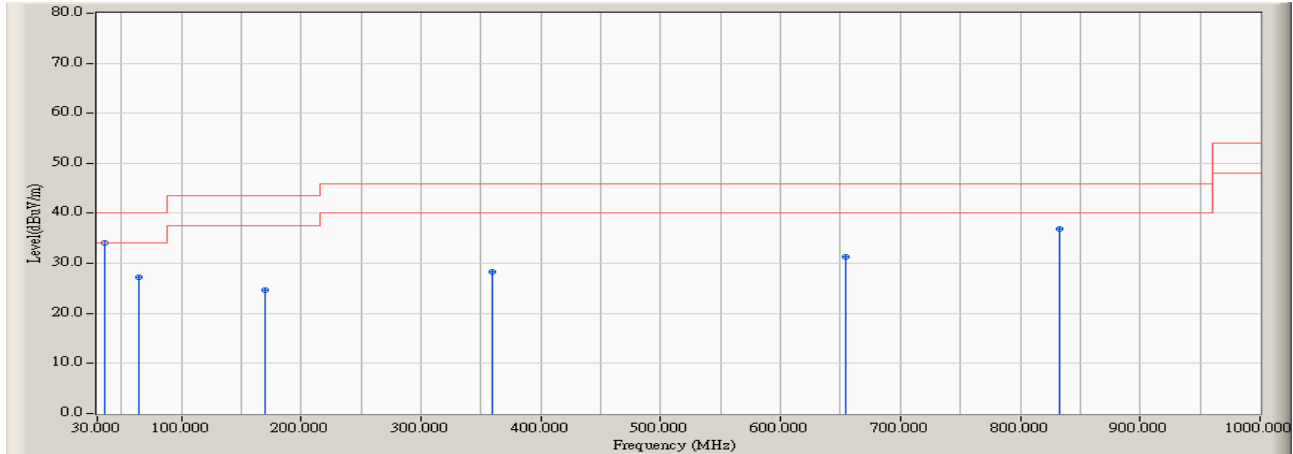


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		35.820	4.005	28.652	32.657	-7.343	40.000	QUASIPeAK
2		167.740	-2.703	38.732	36.029	-7.471	43.500	QUASIPeAK
3	*	284.140	1.280	38.778	40.058	-5.942	46.000	QUASIPeAK
4		352.040	3.477	31.684	35.161	-10.839	46.000	QUASIPeAK
5		493.660	6.580	30.991	37.571	-8.429	46.000	QUASIPeAK
6		833.160	11.404	22.447	33.851	-12.149	46.000	QUASIPeAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. 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 (802.11a-6Mbps) (5220MHz)

Vertical

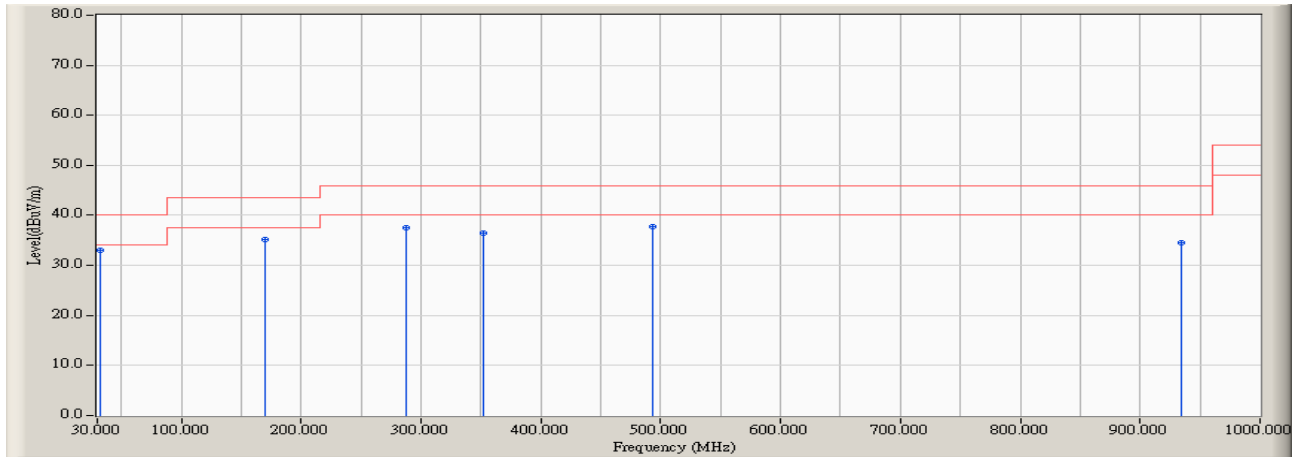
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	35.820	4.005	30.045	34.050	-5.950	40.000	QUASIPeAK
2		64.920	-7.056	34.263	27.207	-12.793	40.000	QUASIPeAK
3		169.680	-2.789	27.430	24.641	-18.859	43.500	QUASIPeAK
4		359.800	3.721	24.606	28.327	-17.673	46.000	QUASIPeAK
5		654.680	9.160	22.221	31.381	-14.619	46.000	QUASIPeAK
6		833.160	11.404	25.498	36.902	-9.098	46.000	QUASIPeAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. 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 (802.11n-20BW 7.2Mbps) (5220MHz)

Horizontal

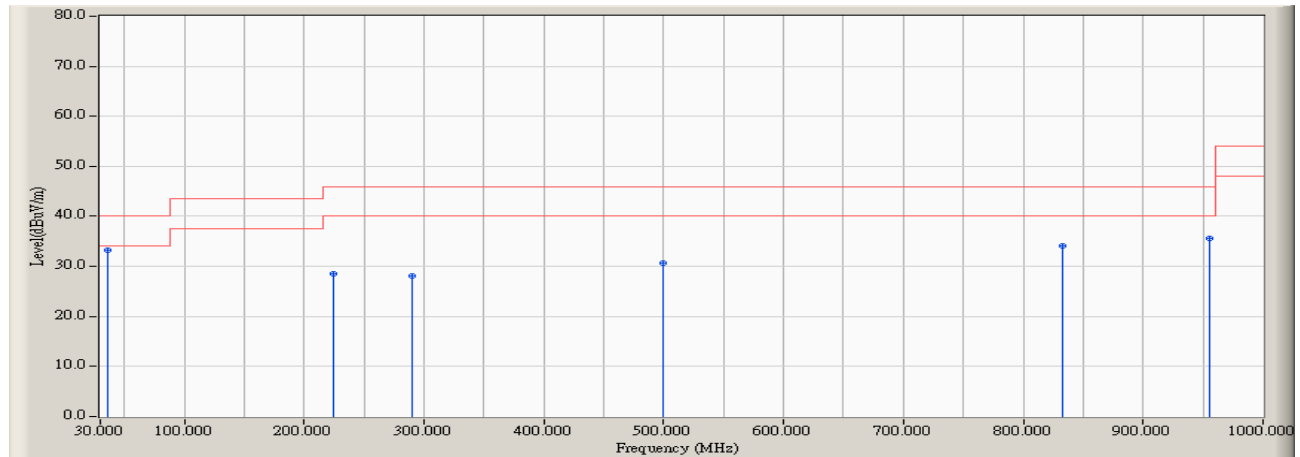


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	31.940	5.185	27.824	33.009	-6.991	40.000	QUASIPeAK
2		169.680	-2.789	37.990	35.201	-8.299	43.500	QUASIPeAK
3		288.020	1.370	36.188	37.558	-8.442	46.000	QUASIPeAK
4		352.040	3.477	32.975	36.452	-9.548	46.000	QUASIPeAK
5		493.660	6.580	31.266	37.846	-8.154	46.000	QUASIPeAK
6		934.040	12.679	21.837	34.516	-11.484	46.000	QUASIPeAK

Note:

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

Product : AI Camera
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Date : 2019/03/27
 Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5220MHz)

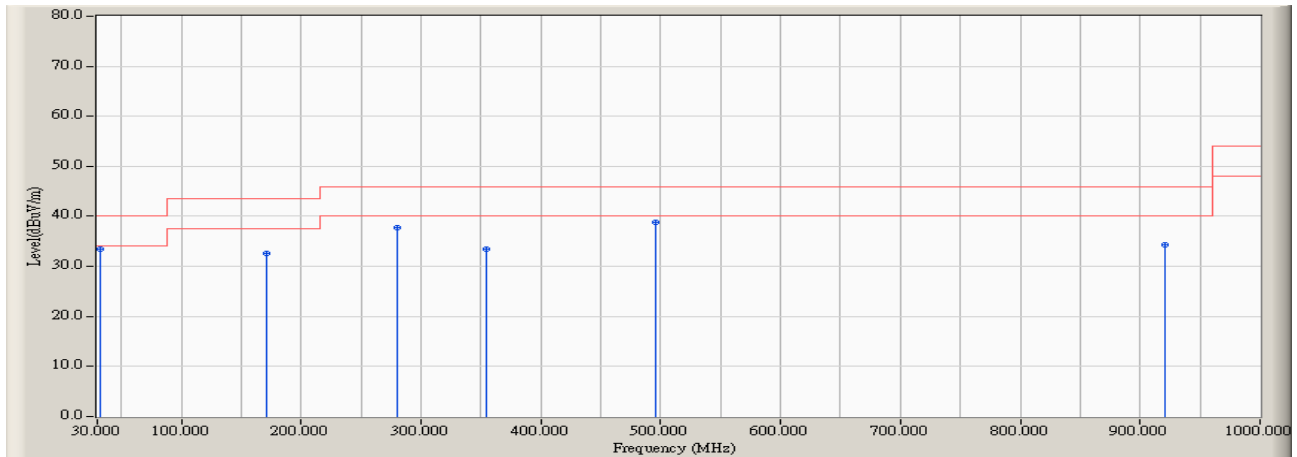
Vertical

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	35.820	4.005	29.242	33.247	-6.753	40.000	QUASIPeAK
2		224.000	-1.704	30.291	28.587	-17.413	46.000	QUASIPeAK
3		289.960	1.410	26.703	28.113	-17.887	46.000	QUASIPeAK
4		499.480	6.683	23.898	30.581	-15.419	46.000	QUASIPeAK
5		833.160	11.404	22.800	34.204	-11.796	46.000	QUASIPeAK
6		955.380	13.000	22.582	35.582	-10.418	46.000	QUASIPeAK

Note:

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

Product : AI Camera
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Date : 2019/03/27
 Test Mode : Mode 3: Transmit (802.11n-40BW 15Mbps) (5230MHz)

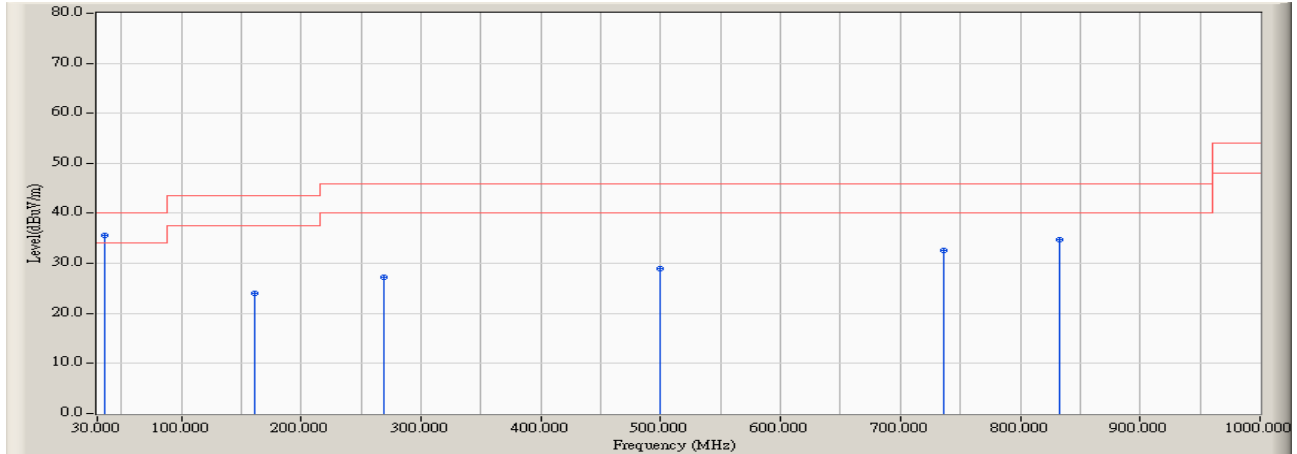
Horizontal

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	31.940	5.185	28.274	33.459	-6.541	40.000	QUASIPeAK
2		171.620	-2.855	35.445	32.590	-10.910	43.500	QUASIPeAK
3		280.260	1.185	36.629	37.814	-8.186	46.000	QUASIPeAK
4		353.980	3.532	29.956	33.488	-12.512	46.000	QUASIPeAK
5		495.600	6.615	32.224	38.839	-7.161	46.000	QUASIPeAK
6		920.460	12.457	21.771	34.228	-11.772	46.000	QUASIPeAK

Note:

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

Product : AI Camera
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Date : 2019/03/27
 Test Mode : Mode 3: Transmit (802.11n-40BW 15Mbps) (5230MHz)

Vertical

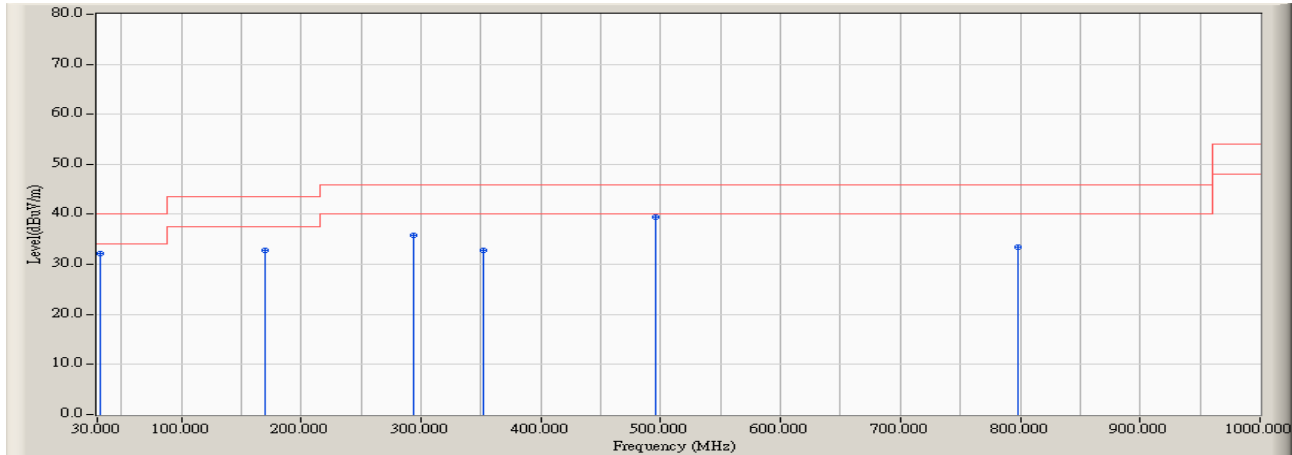
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	35.820	4.005	31.661	35.666	-4.334	40.000	QUASIPeAK
2		161.920	-2.426	26.455	24.029	-19.471	43.500	QUASIPeAK
3		268.620	1.100	26.245	27.345	-18.655	46.000	QUASIPeAK
4		499.480	6.683	22.300	28.983	-17.017	46.000	QUASIPeAK
5		736.160	9.982	22.525	32.507	-13.493	46.000	QUASIPeAK
6		833.160	11.404	23.393	34.797	-11.203	46.000	QUASIPeAK

Note:

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

Product : AI Camera
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Date : 2019/03/27
 Test Mode : Mode 6: Transmit (802.11ac-80BW-32.5Mbps) (5210MHz)

Horizontal

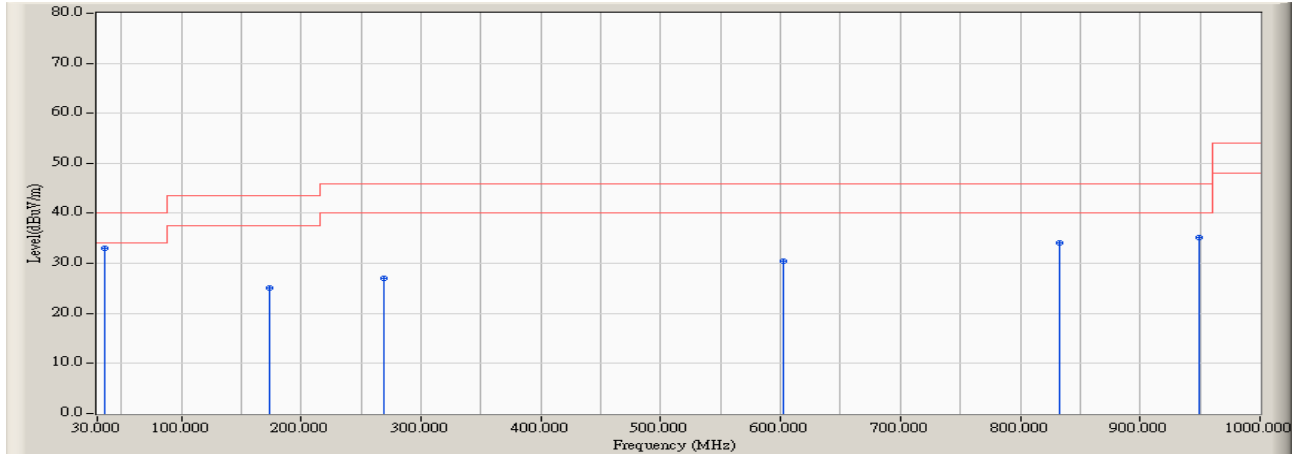


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		31.940	5.185	27.058	32.243	-7.757	40.000	QUASIPeAK
2		169.680	-2.789	35.674	32.885	-10.615	43.500	QUASIPeAK
3		293.840	1.500	34.304	35.804	-10.196	46.000	QUASIPeAK
4		352.040	3.477	29.386	32.863	-13.137	46.000	QUASIPeAK
5	*	495.600	6.615	32.929	39.544	-6.456	46.000	QUASIPeAK
6		798.240	10.743	22.668	33.411	-12.589	46.000	QUASIPeAK

Note:

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

Product : AI Camera
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Date : 2019/03/27
 Test Mode : Mode 6: Transmit (802.11ac-80BW-32.5Mbps) (5210MHz)

Vertical

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	35.820	4.005	28.976	32.981	-7.019	40.000	QUASIPeAK
2		173.560	-2.910	28.064	25.154	-18.346	43.500	QUASIPeAK
3		268.620	1.100	25.826	26.926	-19.074	46.000	QUASIPeAK
4		602.300	8.375	22.134	30.509	-15.491	46.000	QUASIPeAK
5		833.160	11.404	22.748	34.152	-11.848	46.000	QUASIPeAK
6		949.560	12.937	22.321	35.258	-10.742	46.000	QUASIPeAK

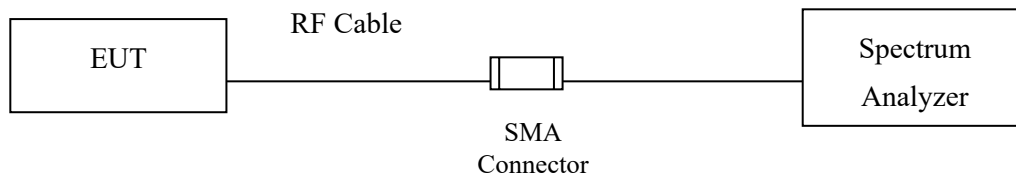
Note:

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

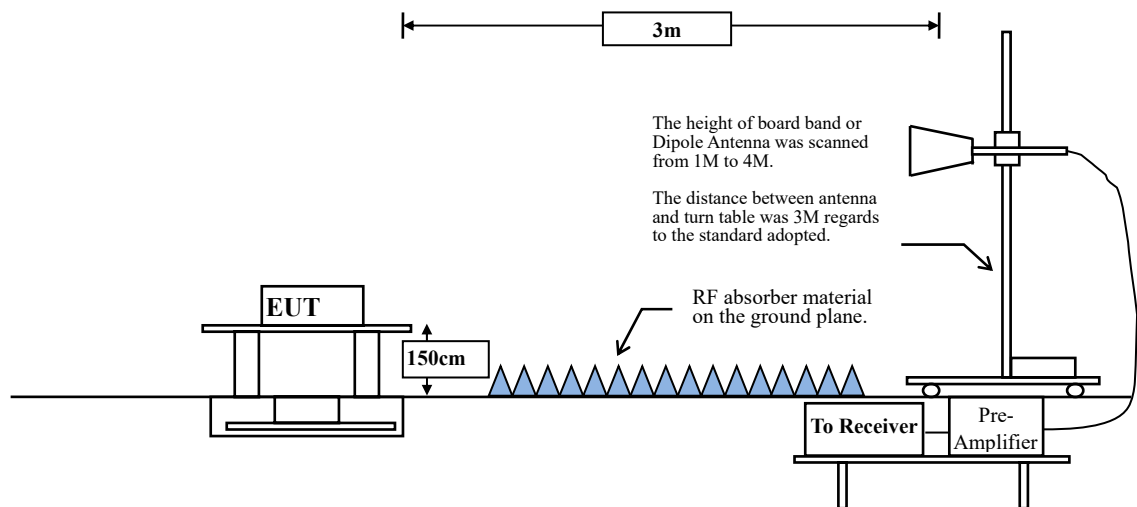
6. Band Edge

6.1. Test Setup

RF Conducted Measurement:



RF Radiated Measurement:



6.2. Limits

The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.

Radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209:

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m @3m	dBμV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks :

1. RF Voltage (dBμV) = 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.

6.3. Test Procedure

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table can rotate 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 below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz. The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

RBW and VBW Parameter setting:

According to KDB 789033 section II.G.5 Procedure for Unwanted Maximum Emissions
Measurements above 1000 MHz.

RBW = 1MHz.

VBW $\geq$ 3MHz.

According to KDB 789033 section II.G.6 Procedures for Average Unwanted Emissions
Measurements above 1000 MHz.

RBW = 1MHz.

VBW = 10Hz, when duty cycle $\geq$ 98 %

VBW $\geq$ 1/T, when duty cycle < 98 %

(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

5GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11 a	95.19	2.0072	498	500
802.11 n20	97.76	1.8986	527	1000
802.11 n40	91.91	0.9058	1104	2000
802.11 ac80	82.61	0.4130	2421	3000

Note: Duty Cycle Refer to Section 8

6.4. Uncertainty

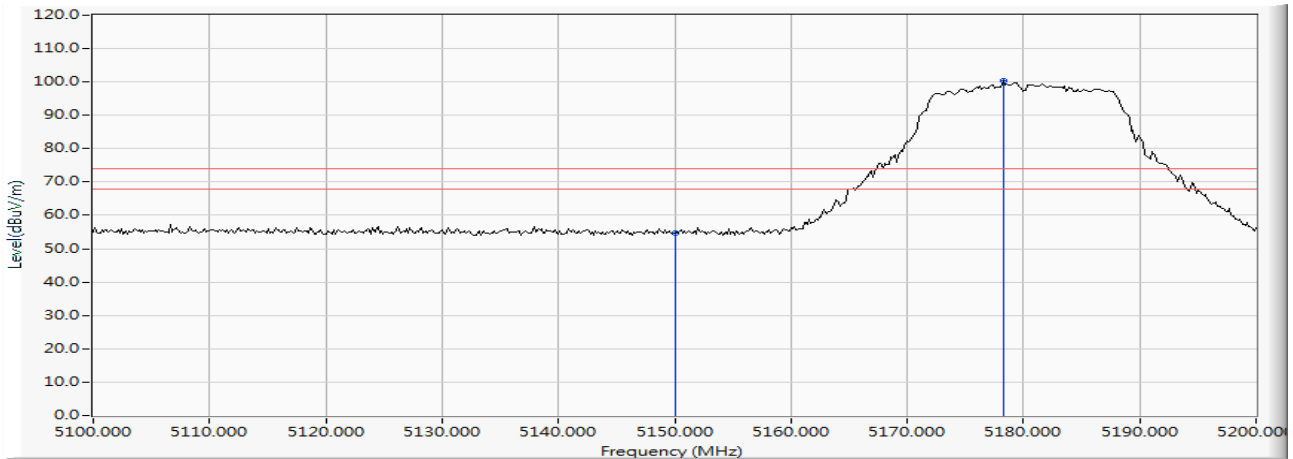
$\pm$ 4.08 dB above 1GHz

$\pm$ 4.22 dB below 1GHz

6.5. Test Result of Band Edge

Product : AI Camera
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2019/03/16
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5180MHz)

Horizontal

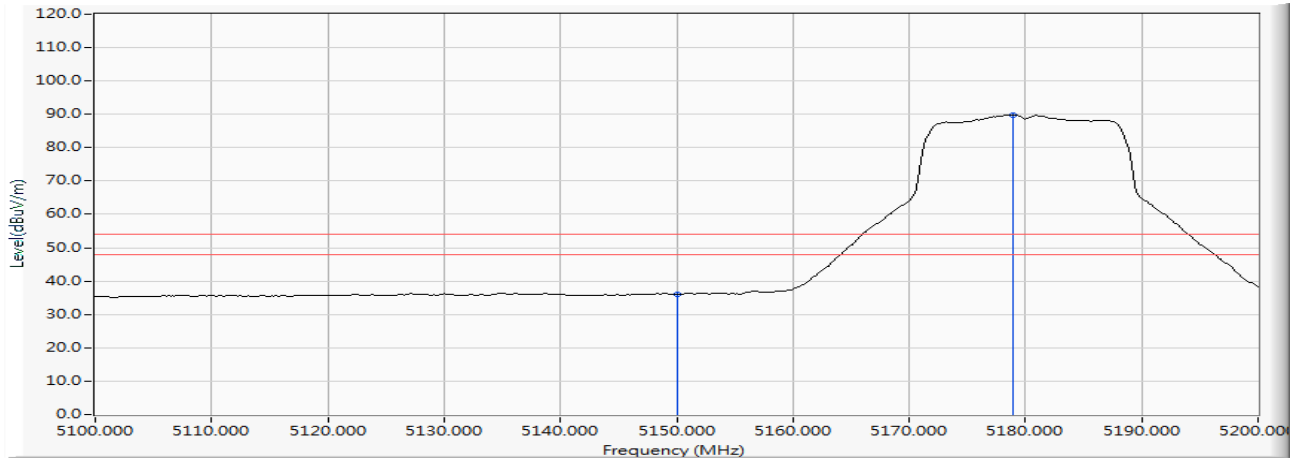


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		5150.000	10.470	44.198	54.669	-19.331	74.000	PEAK
2	*	5178.261	10.398	89.847	100.245	26.245	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : AI Camera
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2019/03/16
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5180MHz)

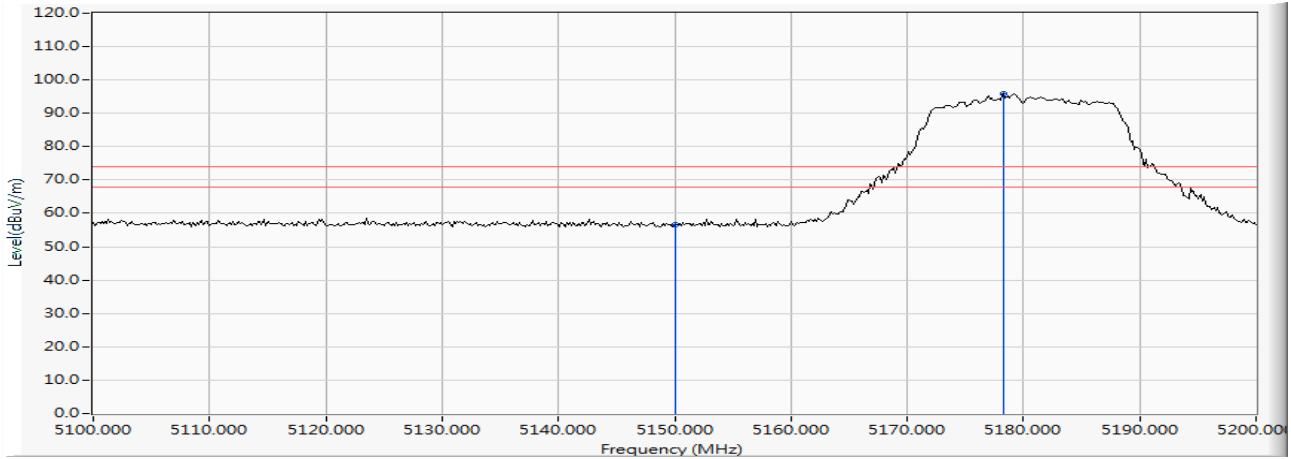
Horizontal

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		5150.000	10.470	25.502	35.973	-18.027	54.000	AVERAGE
2	*	5178.986	10.396	79.513	89.909	35.909	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : AI Camera
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2019/03/16
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5180MHz)

Vertical

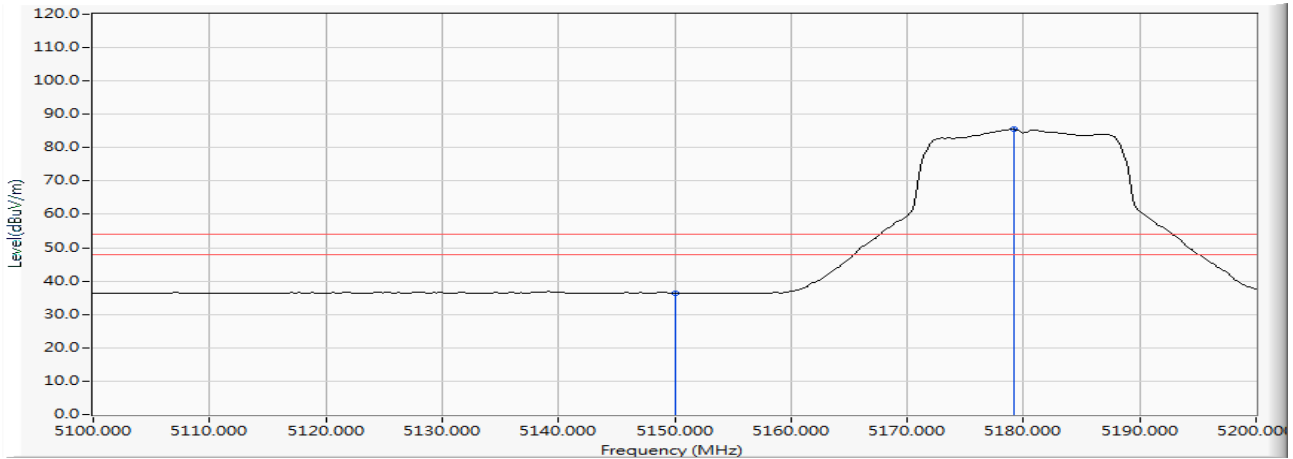
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		5150.000	12.390	44.081	56.471	-17.529	74.000	PEAK
2	*	5178.261	12.495	83.294	95.789	21.789	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : AI Camera
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2019/03/16
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5180MHz)

Vertical

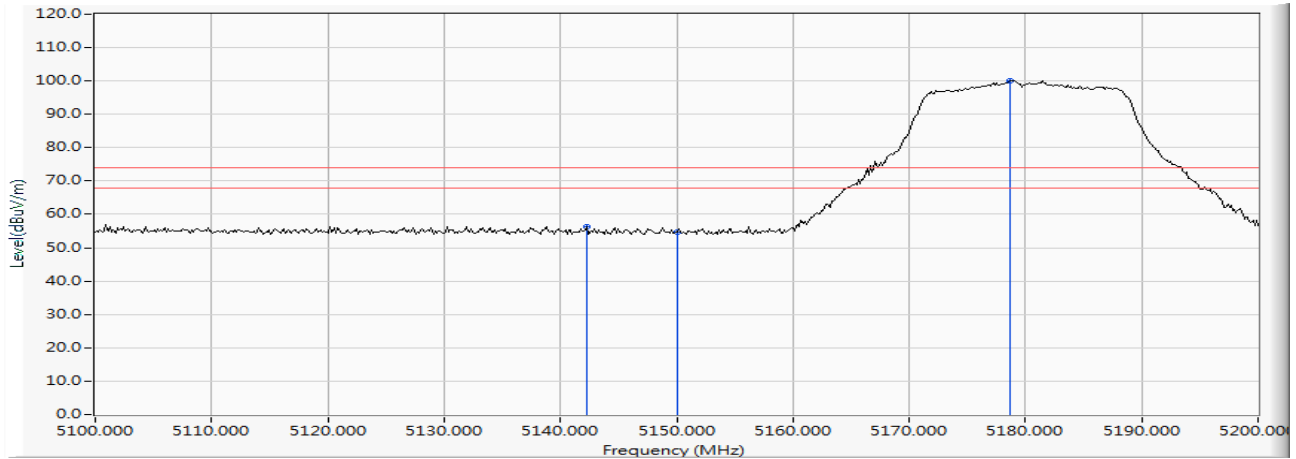


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		5150.000	12.390	23.922	36.312	-17.688	54.000	AVERAGE
2	*	5179.130	12.498	73.053	85.551	31.551	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : AI Camera
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2019/03/16
 Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5180MHz)

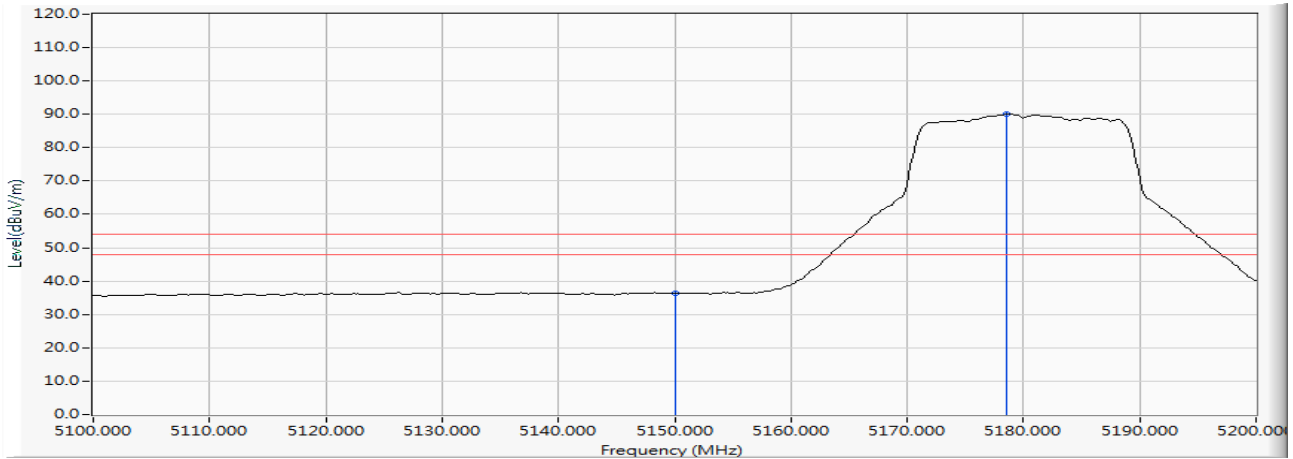
Horizontal

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		5142.319	10.490	45.964	56.454	-17.546	74.000	PEAK
2		5150.000	10.470	44.332	54.803	-19.197	74.000	PEAK
3	*	5178.696	10.397	89.751	100.148	26.148	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : AI Camera
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2019/03/16
 Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5180MHz)

Horizontal

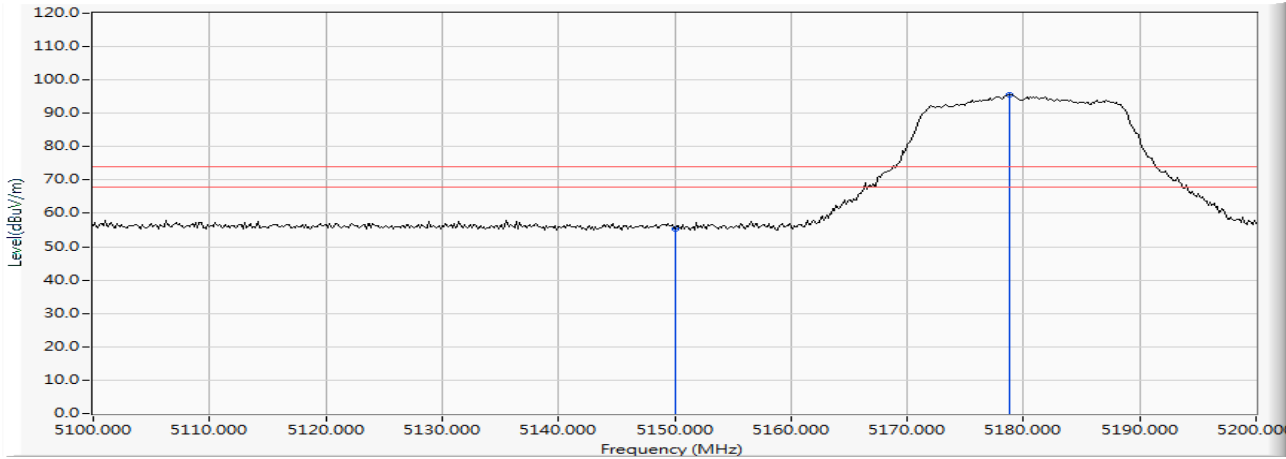
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		5150.000	10.470	25.785	36.256	-17.744	54.000	AVERAGE
2	*	5178.551	10.398	79.668	90.065	36.065	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : AI Camera
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2019/03/16
 Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5180MHz)

Vertical

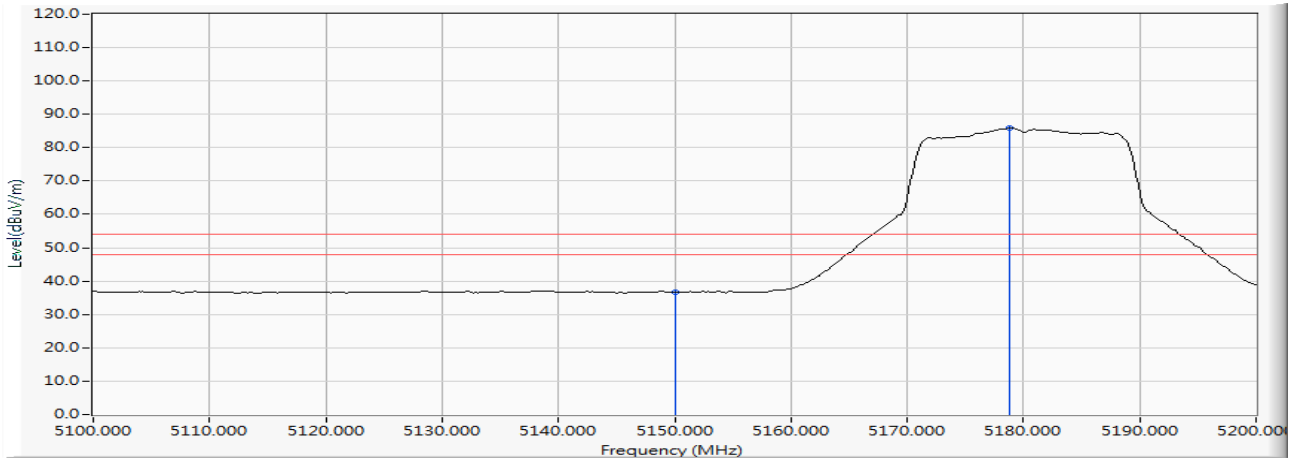


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		5150.000	12.390	43.076	55.466	-18.534	74.000	PEAK
2	*	5178.841	12.498	83.190	95.687	21.687	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : AI Camera
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2019/03/16
 Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5180MHz)

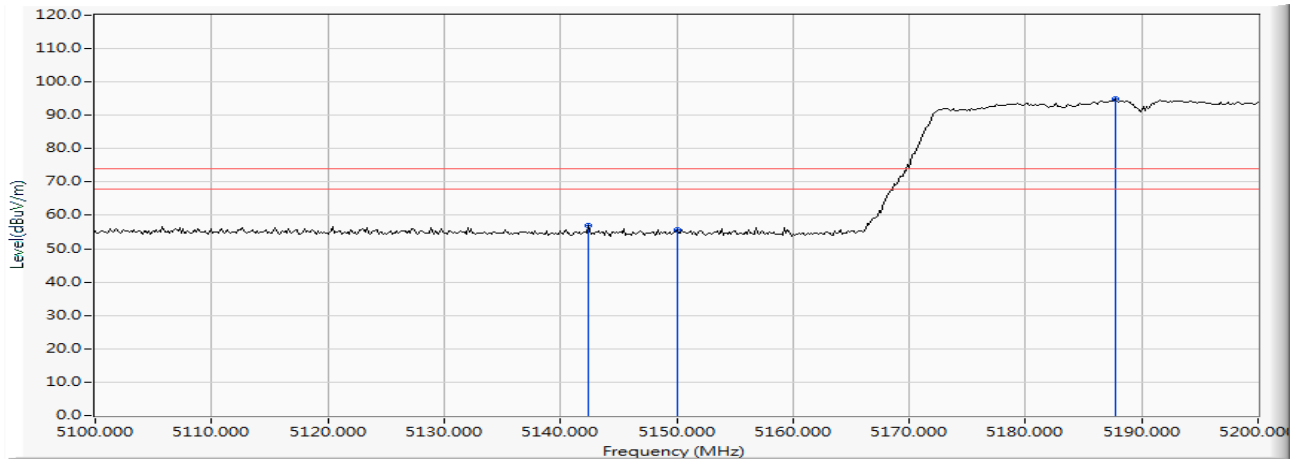
Vertical

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		5150.000	12.390	24.175	36.565	-17.435	54.000	AVERAGE
2	*	5178.841	12.498	73.465	85.962	31.962	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : AI Camera
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2019/03/16
 Test Mode : Mode 3: Transmit (802.11n-40BW 15Mbps) (5190MHz)

Horizontal

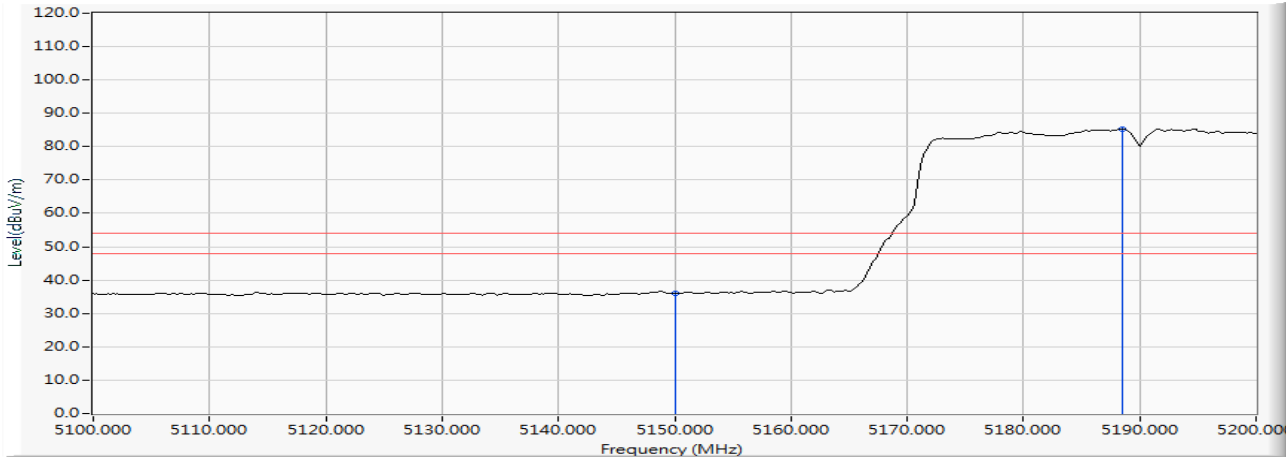
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		5142.464	10.490	46.396	56.885	-17.115	74.000	PEAK
2		5150.000	10.470	45.209	55.680	-18.320	74.000	PEAK
3	*	5187.681	10.375	84.434	94.808	20.808	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : AI Camera
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2019/03/16
 Test Mode : Mode 3: Transmit (802.11n-40BW 15Mbps) (5190MHz)

Horizontal



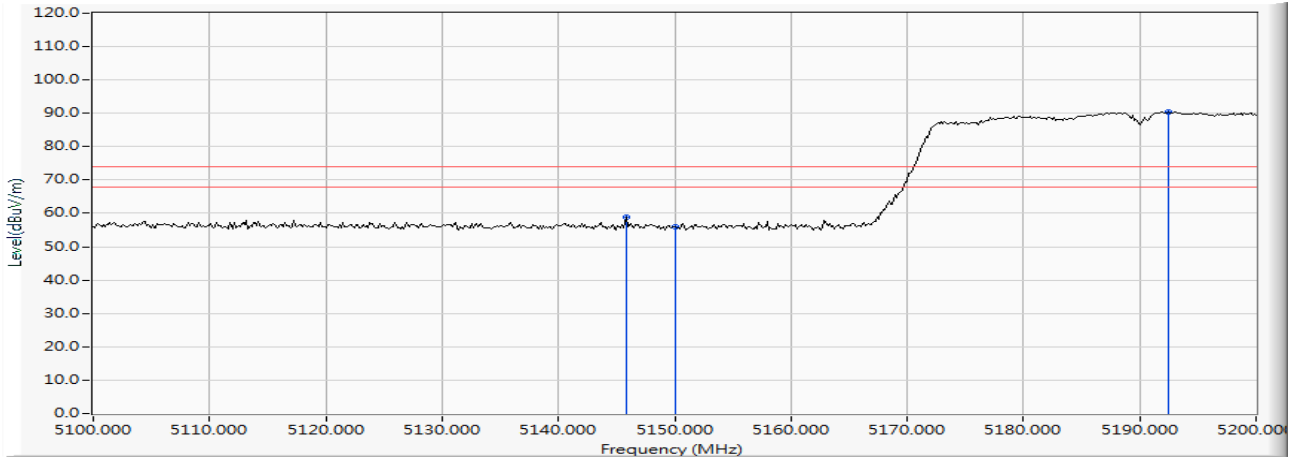
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		5150.000	10.470	25.557	36.028	-17.972	54.000	AVERAGE
2	*	5188.551	10.372	74.957	85.328	31.328	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : AI Camera
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2019/03/16
 Test Mode : Mode 3: Transmit (802.11n-40BW 15Mbps) (5190MHz)

Vertical

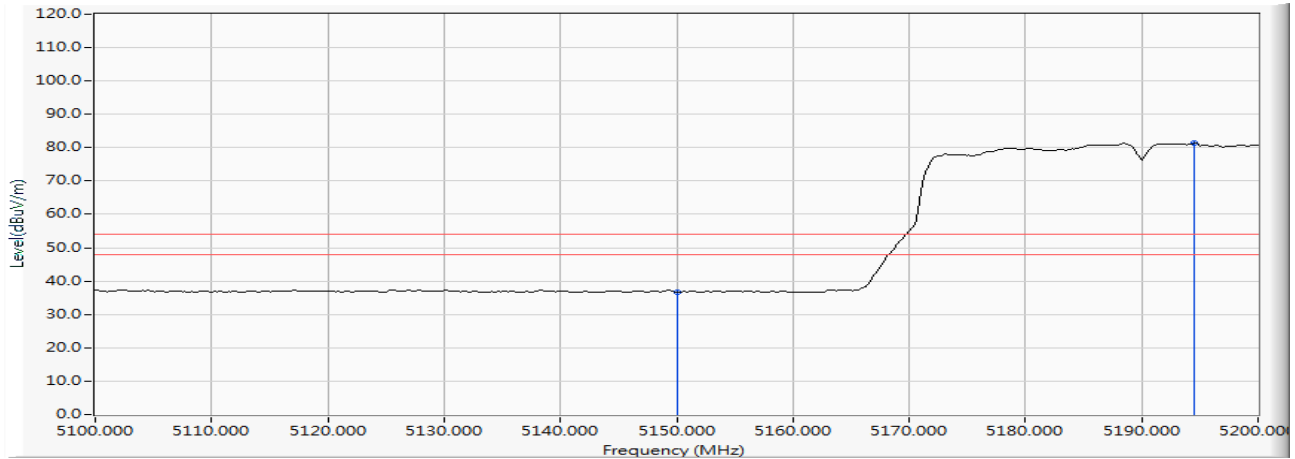


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		5145.797	12.375	46.492	58.867	-15.133	74.000	PEAK
2		5150.000	12.390	43.659	56.049	-17.951	74.000	PEAK
3	*	5192.464	12.543	77.915	90.459	16.459	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : AI Camera
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2019/03/16
 Test Mode : Mode 3: Transmit (802.11n-40BW 15Mbps) (5190MHz)

Vertical

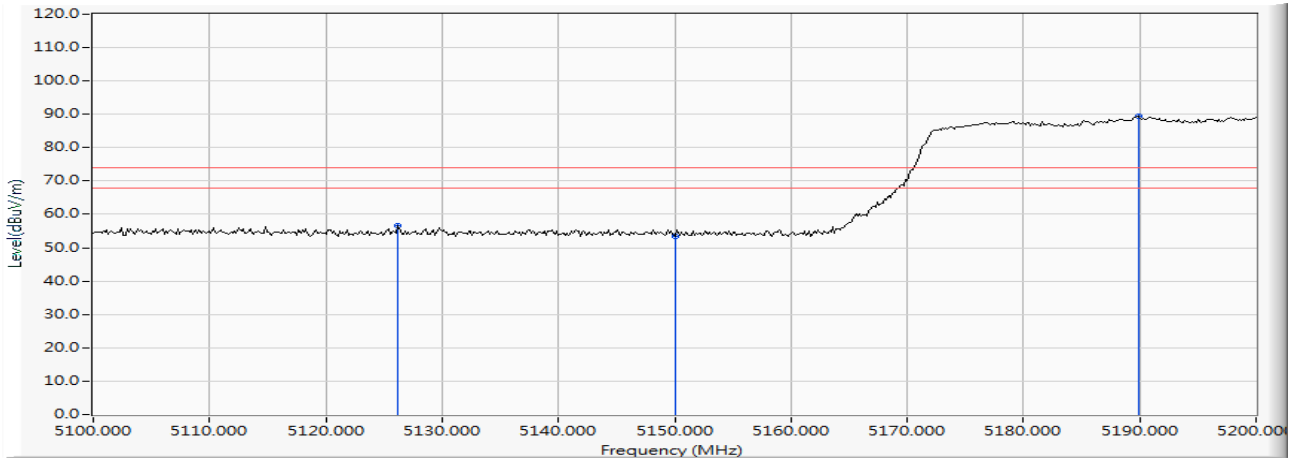
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		5150.000	12.390	24.222	36.612	-17.388	54.000	AVERAGE
2	*	5194.493	12.550	68.844	81.394	27.394	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : AI Camera
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2019/03/16
 Test Mode : Mode 6: Transmit (802.11ac-80BW-32.5Mbps) (5210MHz)

Horizontal



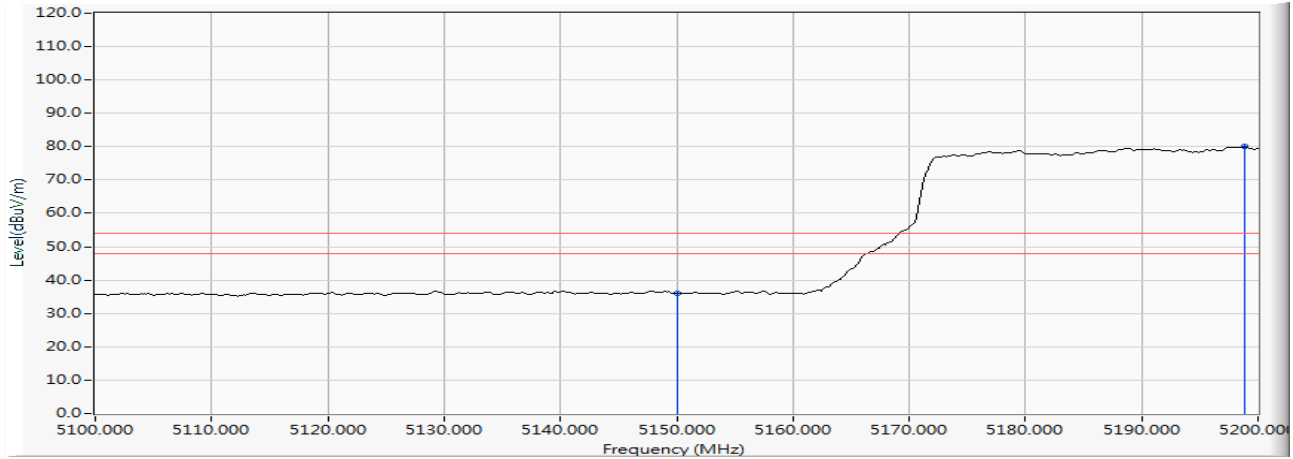
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		5126.232	10.530	45.994	56.524	-17.476	74.000	PEAK
2		5150.000	10.470	42.972	53.443	-20.557	74.000	PEAK
3	*	5189.855	10.367	78.939	89.306	15.306	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : AI Camera
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2019/03/16
 Test Mode : Mode 6: Transmit (802.11ac-80BW-32.5Mbps) (5210MHz)

Horizontal



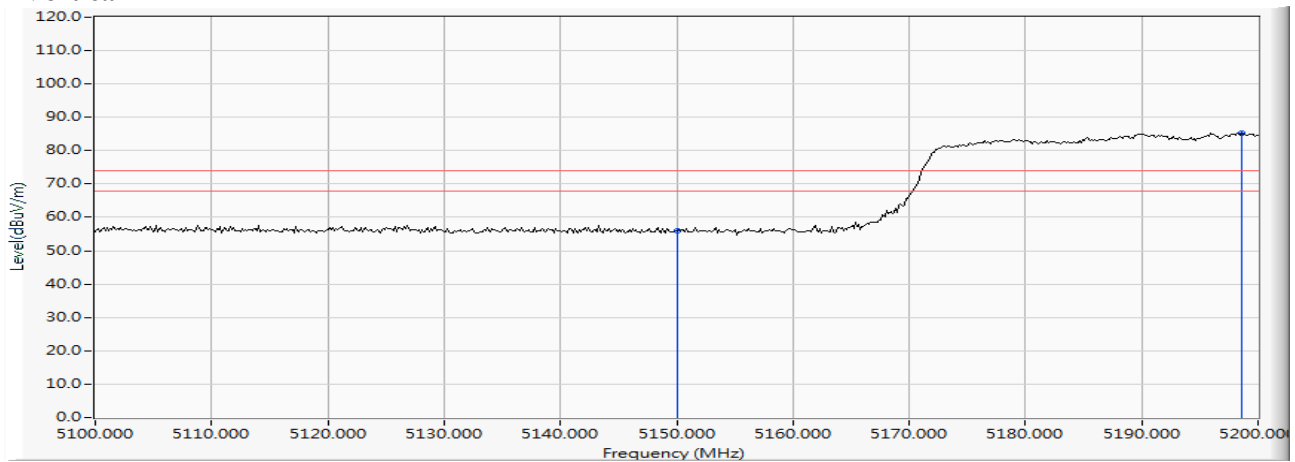
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		5150.000	10.470	25.491	35.962	-18.038	54.000	AVERAGE
2	*	5198.841	10.335	69.629	79.965	25.965	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : AI Camera
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2019/03/16
 Test Mode : Mode 6: Transmit (802.11ac-80BW-32.5Mbps) (5210MHz)

Vertical

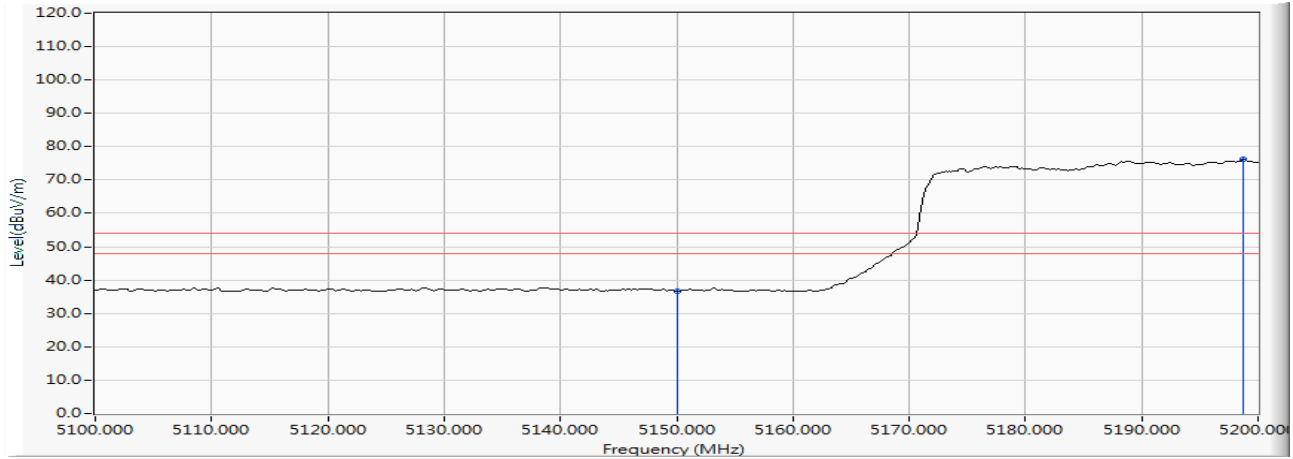


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		5150.000	12.390	43.712	56.102	-17.898	74.000	PEAK
2	*	5198.551	12.561	72.832	85.393	11.393	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : AI Camera
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2019/03/16
 Test Mode : Mode 6: Transmit (802.11ac-80BW-32.5Mbps) (5210MHz)

Vertical

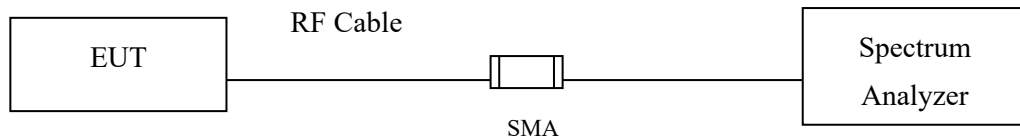
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		5150.000	12.390	24.377	36.767	-17.233	54.000	AVERAGE
2	*	5198.696	12.561	63.608	76.169	22.169	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

7. Duty Cycle

7.1. Test Setup



7.2. Test Procedure

The EUT was setup according to ANSI C63.10 2013; tested according to test procedure of KDB789033 for compliance to FCC 47CFR 15.407 requirements.

7.3. Uncertainty

$\pm 2.31\text{msec}$

7.4. Test Result of Duty Cycle

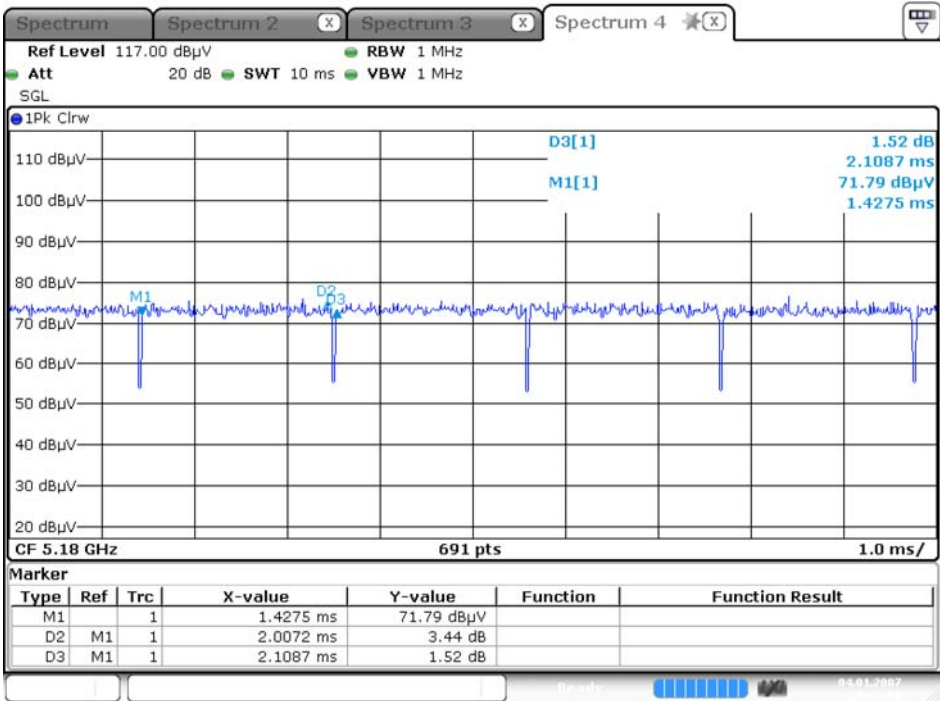
Product : AI Camera
Test Item : Duty Cycle
Test Mode : Mode 1: Transmit

Duty Cycle Formula:
Duty Cycle = Ton / (Ton + Toff)
Duty Factor = 10 Log (1/Duty Cycle)

Results:

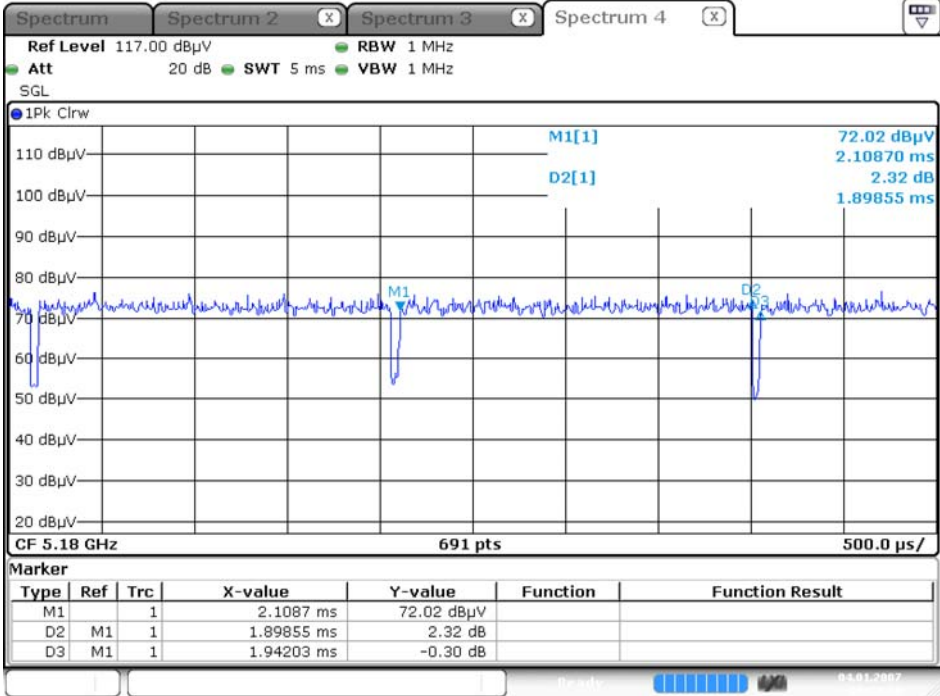
5GHz band	Ton (ms)	Ton + Toff (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11 a	2.0072	2.1087	95.19	0.21
802.11 n20	1.8986	1.9420	97.76	0.10
802.11 n40	0.9058	0.9855	91.91	0.37
802.11 ac80	0.4130	0.5000	82.61	0.83

802.11a



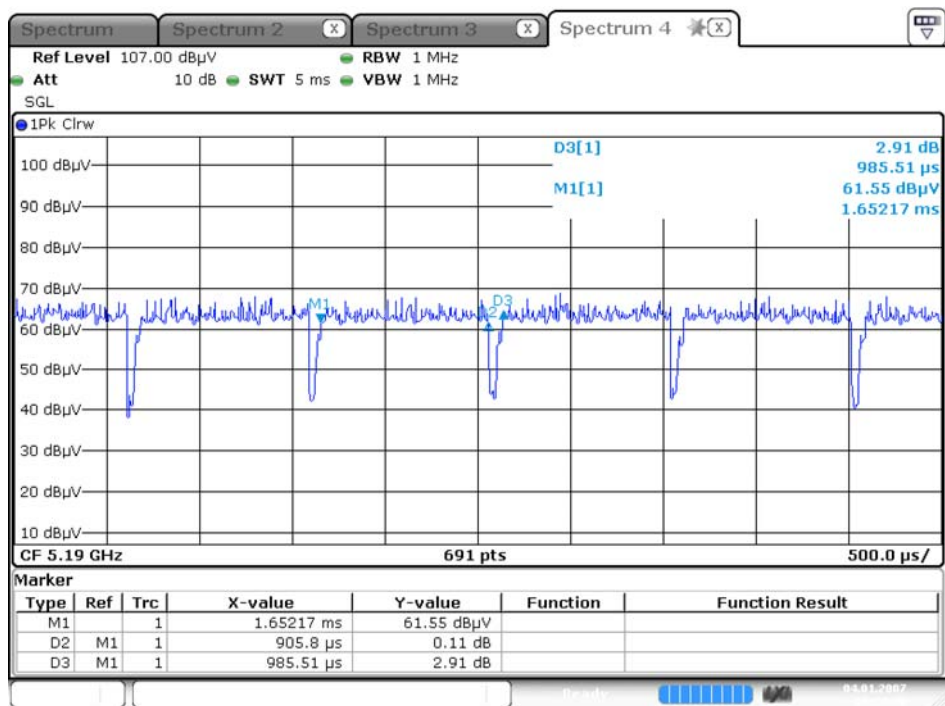
Date: 4.JAN.2007 00:14:48

802.11n20



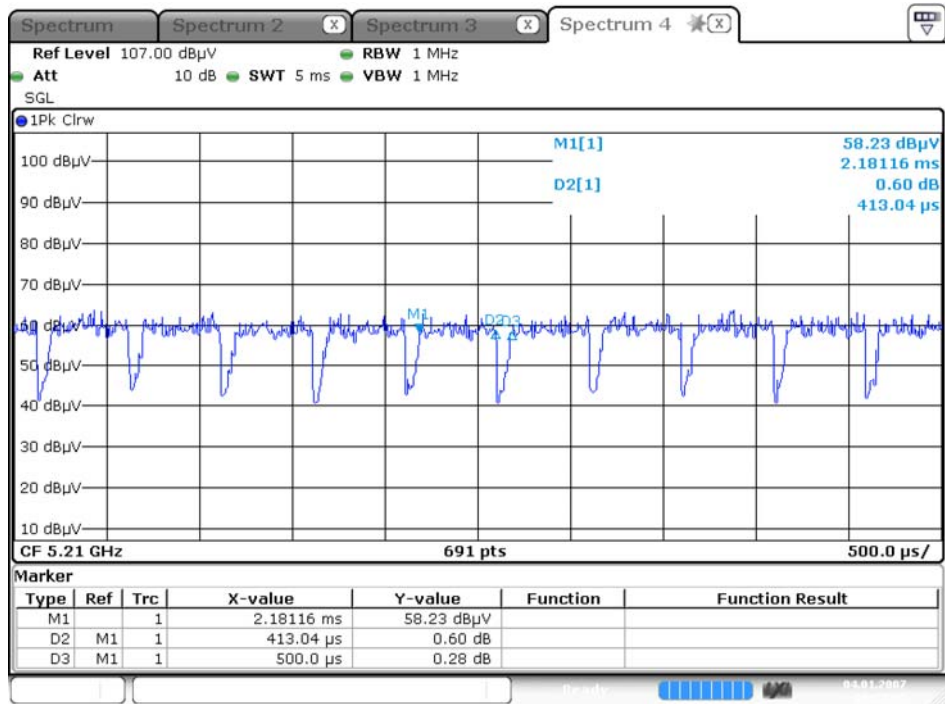
Date: 4.JAN.2007 00:18:19

802.11n40



Date: 4.JAN.2007 00:20:46

802.11ac80



Date: 4.JAN.2007 00:22:44

8. EMI Reduction Method During Compliance Testing

No modification was made during testing.