



MEASUREMENT REPORT

FCC PART 15.249

FCC ID: 2ADTD-TCV907BI
Applicant: Hangzhou Hikvision Digital Technology Co., Ltd
Application Type: Certification
Product: High Performance All-Rounder Traffic Camera
Model No.: iDS-TCV907-BIR
Brand Name: HIKVISION
FCC Classification: Part 15 Low Power Communication Device Transmitter (DXX)
FCC Rule Part(s): Part 15.249
Test Procedure(s): ANSI C63.10 - 2013
Test Date: October 26 ~ November 16, 2020

Reviewed By:

Oscar Shi

(Oscar Shi)

Approved By:

Robin Wu

(Robin Wu)



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013. Test results reported herein relate only to the item(s) tested.

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Revision History

Report No.	Version	Description	Issue Date	Note
2010RSU048-U1	Rev. 01	Initial Report	11-27-2020	Valid

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1. General Information

1.1. Applicant

Hangzhou Hikvision Digital Technology Co., Ltd
 No.555 Qianmo Road, Binjiang District, Hangzhou 310052, China

1.2. Manufacturer

Hangzhou Hikvision Digital Technology Co., Ltd
 No.555 Qianmo Road, Binjiang District, Hangzhou 310052, China

1.3. Testing Facility

<input checked="" type="checkbox"/>	Test Site – MRT Suzhou Laboratory
	Laboratory Location (Suzhou - Wuzhong)
	D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China
	Laboratory Location (Suzhou - SIP)
	4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China
	Laboratory Accreditations
	A2LA: 3628.01 CNAS: L10551
	FCC: CN1166 ISED: CN0001
	VCCI: R-20025, G-20034, C-20020, T-20020
<input type="checkbox"/>	Test Site – MRT Shenzhen Laboratory
	Laboratory Location (Shenzhen)
	1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China
	Laboratory Accreditations
	A2LA: 3628.02 CNAS: L10551
	FCC: CN1284 ISED: CN0105
<input type="checkbox"/>	Test Site – MRT Taiwan Laboratory
	Laboratory Location (Taiwan)
	No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)
	Laboratory Accreditations
	TAF: L3261-190725
	FCC: 291082, TW3261 ISED: TW3261

2. PRODUCT INFORMATION

2.1. Equipment Description

Product Name:	High Performance All-Rounder Traffic Camera
Model No.:	iDS-TCV907-BIR
Serial Model No.:	iDS-TCV907-BER, iDS-TCV507-BIR, iDS-TCV507-BER, iDS-TCE907-BR, iDS-TCE507-BR, iDS-TCV904-AIR, iDS-TCV907-CIR, iDS-TCV907-CER, iDS-TCV507-CIR, iDS-TCV507-CER iDS-TCE907-CR, iDS-TCE507-CR, iDS-TCV907-AIR, iDS-TCV907-AER, iDS-TCV507-AIR, iDS-TCV507-AER, iDS-TCE907-AR, iDS-TCE507-AR, iDS-TCVC07-BIR, iDS-TCVC07-BER, iDS-TCEC07-BR, iDS-TCVC07-CI, iDS-TCVC07-CER, iDS-TCEC07-CR, iDS-TCV907-BE, iDS-TCV507-BI, iDS-TCV507-BE, iDS-TCE907-B, iDS-TCE507-B, iDS-TCV904-AI, iDS-TCV907-CI, iDS-TCV907-CE, iDS-TCV507-CI, iDS-TCV507-CE, iDS-TCE907-C, iDS-TCE507-C, iDS-TCV907-AI, iDS-TCV907-AE, iDS-TCV507-AI, iDS-TCV507-AE, iDS-TCE907-A, iDS-TCE507-A, iDS-TCVC07-BI, iDS-TCVC07-BE, iDS-TCEC07-B, iDS-TCVC07-CI, iDS-TCVC07-CE, iDS-TCEC07-C, iDS-TCS907-CER, iDS-TCS907-CIR, iDS-TCS807-CR, iDS-TCS807-CIR, iDS-TCS800-C, iDS-TCS800-CI, iDS-TCS917-CER, iDS-TCS917-CIR, iDS-TCS917-CE, iDS-TCS917-CI
Brand Name:	HIKVISION
Frequency:	24GHz
Type of Modulation:	FMCW
Antenna Type:	Array antenna
Antenna Gain:	16dBi
EUT Identification No.:	2010RSU048 Sample#01 (Radiated & AC conducted emission)
Accessories	
Adapter:	Model No.: EUV-150S036ST-KW02 150W Input Power: 100 - 240V ~ 50/60Hz, 1.75A MAX Output Power: 36VDC 4.17A Max

Note: The model differences are only for marketing purpose, all the schematics is identical, so choose model iDS-TCV907-BIR to test.

2.2. Test Mode

Test Mode	Mode 1: Transmit at 24GHz
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2.3. Labeling Requirements

Per 2.1074 & 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase.

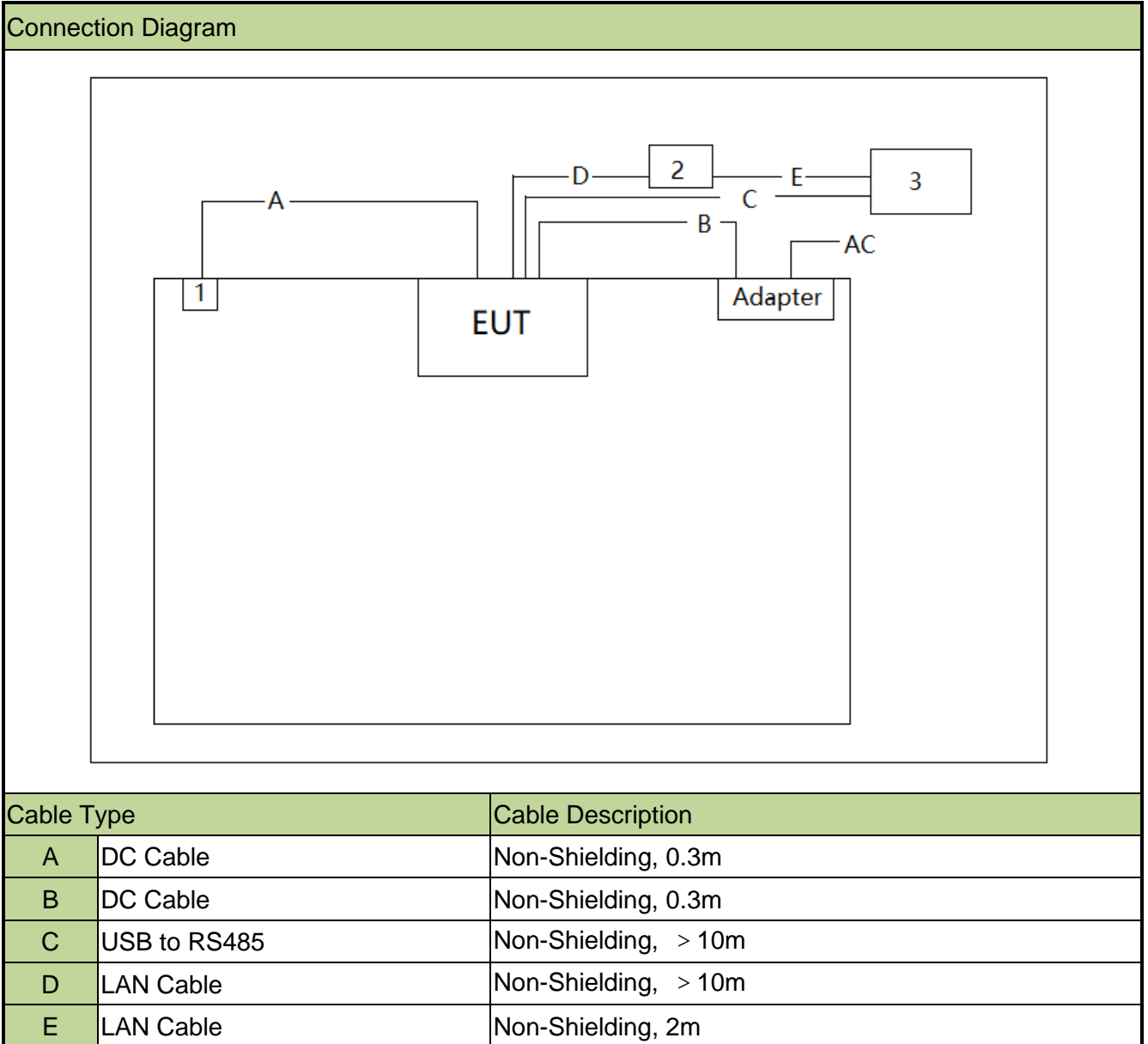
However, when the device is so small wherein placement of the label with specified statement is not practical, only the FCC ID must be displayed on the device per Section 15.19(a)(5). Please see attachment for FCC ID label and label location.

2.4. Test Environment Condition

Ambient Temperature	15°C ~ 35°C
Relative Humidity	20%RH ~ 75%RH

2.5. Configuration of Tested System

This device was tested per the guidance ANSI C63.10:2013 was used to reference the appropriate EUT setup for radiated emissions testing and AC line conducted testing.



2.6. Test System Details

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

Product	Manufacturer	Model No.	Serial No.
1	1Kohm Resistor +LED lamp bead	N/A	N/A
2	Router	HUAWEI	HiRouter-H1
3	Notebook	Lenovo	E431
			PF-10ZRN 13/12

3. ANTENNA REQUIREMENTS

Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

- The antenna of the High Performance All-Rounder Traffic Camera is **permanently attached**.
- There are no provisions for connection to an external antenna.

Conclusion:

This unit complies with the requirement of §15.203.

4. TEST EQUIPMENT CALIBRATION DATE

Spectral Power Density / RF Output Power / Occupied Channel Bandwidth / Unwanted Emissions - SIP-AC2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2021/07/02
EXA Signal Analyzer	Keysight	N9030B	MRTSUE06395	1 year	2021/09/03
Bilog Period Antenna	Schwarzbeck	VULB9168	MRTSUE06646	1 year	2020/12/17
Horn Antenna	Schwarzbeck	BBHA9120D	MRTSUE06648	1 year	2020/12/17
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06024	1 year	2020/12/17
Microwave System Amplifier	Agilent	83017A	MRTSUE06076	1 year	2021/11/14
Preamplifier	EMCI	EMC051845SE	MRTSUE06644	1 year	2021/11/12
Micro-Wave Antenna	MI-WWAVE	261U-25	MRTSUE06273	N/A	N/A
Micro-Wave Antenna	MI-WWAVE	261E-25	MRTSUE06276	N/A	N/A
Micro-Wave Antenna	MI-WWAVE	261F-25	MRTSUE06275	N/A	N/A
Micro-Wave Antenna	MI-WWAVE	261G	MRTSUE06274	N/A	N/A
Standard Gain Horn Antenna	A-INFOMW	LB-10-25-A	MRTSUE06410	N/A	N/A
Standard Gain Horn Antenna	A-INFOMW	LB-15-25-A	MRTSUE06409	N/A	N/A
Waveguide Harmonic Mixer	Keysight	M1970V	MRTSUE06271	N/A	N/A
Waveguide Harmonic Mixer	Keysight	M1970W	MRTSUE06272	N/A	N/A
RF Signal Generator	Keysight	E8257D	MRTSUE06453	1 year	2021/07/02
SA Extension Module	Keysight	N9029AV06	MRTSUE06368	N/A	N/A
SA Extension Module	Keysight	N9029AV05	MRTSUE06367	N/A	N/A
SA Extension Module	Keysight	N9029AV03	MRTSUE06366	N/A	N/A
Millimeter wave signal source frequency expander	Keysight	E8257DV15	MRTSUE06456	N/A	N/A
Thermal Hygrometer	testo	608-H1	MRTSUE06624	1 year	2020/12/29
Anechoic Chamber	RIKEN	SIP-AC2	MRTSUE06781	1 year	2020/12/25

Conducted Emission - SIP-SR2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2021/07/02
Two-Line V-Network	R&S	ENV216	MRTSUE06003	1 year	2021/09/09
Thermal Hygrometer	testo	608-H1	MRTSUE06621	1 year	2020/12/29

Software	Version	Function
EMI Software	V3	EMI Test Software

5. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

AC Conducted Emission Measurement
Measurement Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 9kHz~150kHz: 3.74dB 150kHz~30MHz: 3.44dB
Radiated Disturbance
Measurement Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): Horizontal: 30MHz~300MHz: 5.04dB 300MHz~1GHz: 4.95dB 1GHz~40GHz: 6.40dB Vertical: 30MHz~300MHz: 5.24dB 300MHz~1GHz: 6.03dB 1GHz~40GHz: 6.40dB

6. TEST RESULT

6.1. Summary

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.207	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits	Line Conducted	Pass	Section 6.2
15.209 15.249	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209	Radiated	Pass	Section 6.3 & 6.4
15.215(c)	20dB Spectrum Bandwidth	20 dB bandwidth of the emission in the specific band	Radiated	Pass	Section 6.5

Notes:

1. All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst-case emissions.
2. The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.

6.2. Conducted Emission

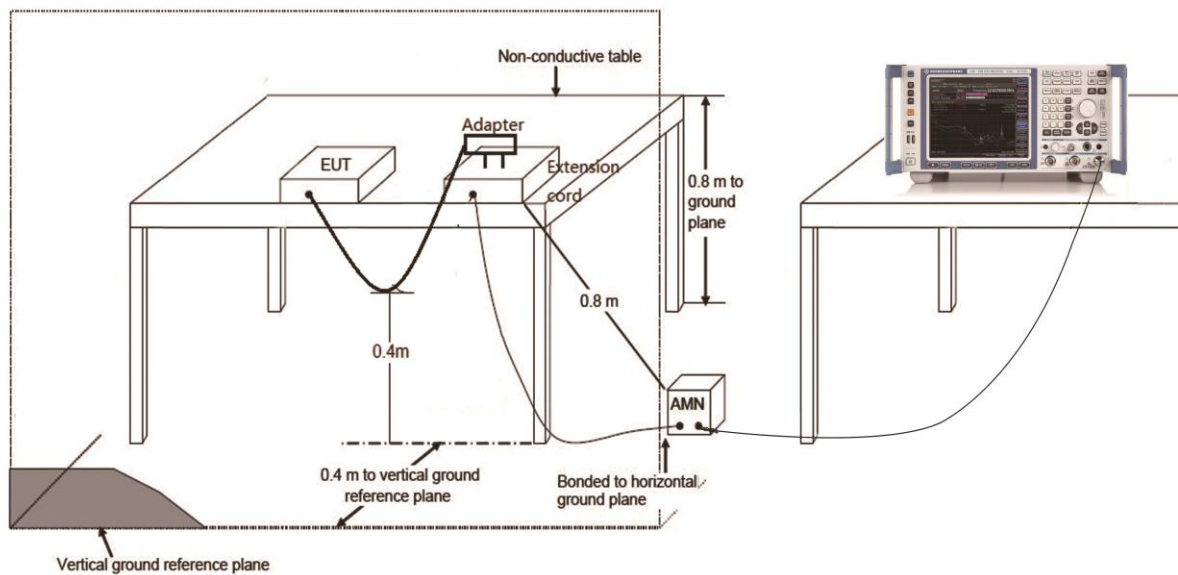
6.2.1. Test Limit

FCC Part 15.207 Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 ~ 0.50	66 ~ 56	56 ~ 46
0.50 ~ 5.0	56	46
5.0 ~ 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

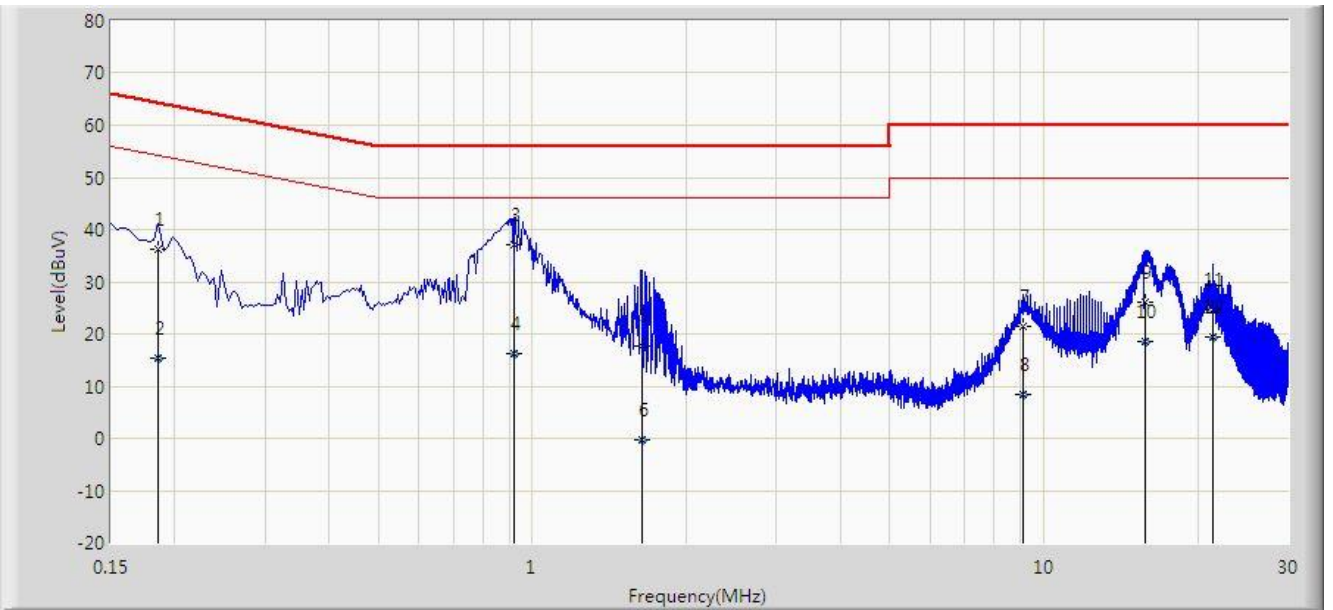
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

6.2.2. Test Setup



6.2.3. Test Result

Site: SIP-SR2	Time: 2020/11/06
Limit: FCC_Part15.207_CE_AC Power	Engineer: Kyrie Xie
Probe: ENV216_101684_Filter On	Polarity: Line
EUT: High Performance All-Rounder Traffic Camera	Power: AC 120V/60Hz
Note: Transmit at frequency 24GHz	

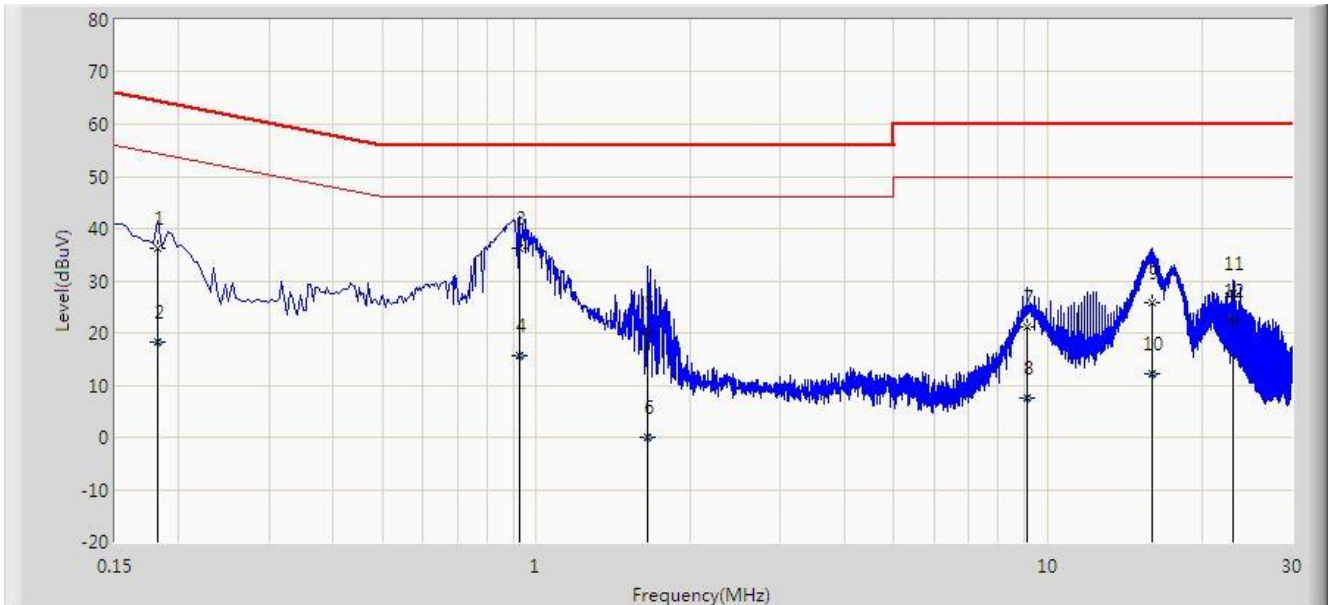


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.186	36.118	26.099	-28.095	64.213	10.019	QP
2			0.186	15.423	5.404	-38.790	54.213	10.019	AV
3		*	0.922	37.046	27.062	-18.954	56.000	9.985	QP
4			0.922	16.098	6.114	-29.902	46.000	9.985	AV
5			1.634	17.562	7.623	-38.438	56.000	9.939	QP
6			1.634	-0.256	-10.195	-46.256	46.000	9.939	AV
7			9.090	21.319	11.387	-38.681	60.000	9.932	QP
8			9.090	8.270	-1.662	-41.730	50.000	9.932	AV
9			15.822	26.122	16.080	-33.878	60.000	10.042	QP
10			15.822	18.655	8.613	-31.345	50.000	10.042	AV
11			21.382	24.715	14.629	-35.285	60.000	10.087	QP
12			21.382	19.447	9.361	-30.553	50.000	10.087	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB)

Site: SIP-SR2	Time: 2020/11/06
Limit: FCC_Part15.207_CE_AC Power	Engineer: Kyrie Xie
Probe: ENV216_101684_Filter On	Polarity: Neutral
EUT: High Performance All-Rounder Traffic Camera	Power: AC 120V/60Hz
Note: Transmit at frequency 24GHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.182	36.298	26.256	-28.096	64.394	10.042	QP
2			0.182	18.312	8.270	-36.082	54.394	10.042	AV
3		*	0.926	36.330	26.334	-19.670	56.000	9.995	QP
4			0.926	15.531	5.536	-30.469	46.000	9.995	AV
5			1.654	20.025	10.075	-35.975	56.000	9.950	QP
6			1.654	0.063	-9.887	-45.937	46.000	9.950	AV
7			9.090	21.171	11.209	-38.829	60.000	9.962	QP
8			9.090	7.499	-2.463	-42.501	50.000	9.962	AV
9			15.974	25.853	15.788	-34.147	60.000	10.065	QP
10			15.974	12.072	2.007	-37.928	50.000	10.065	AV
11			23.066	27.493	17.308	-32.507	60.000	10.185	QP
12			23.066	22.270	12.085	-27.730	50.000	10.185	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB)

6.3. Radiated Emission

6.3.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.249		
Fundamental Frequency (MHz)	Field Strength of Fundamental (mV/m)	Field Strength of Harmonics (uV/m)
902 ~ 928	50	500
2400 ~ 2483.5	50	500
5725 ~ 5875	50	500
24000 ~ 24250	250	2500

Note: FCC Part 15.249 (d), Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100**	3
88 ~ 216	150**	3
216 ~ 960	200**	3
Above 960	500	3

Note 1: The lower limit shall apply at the transition frequency.
 Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
 Note 3: E field strength (dBuV/m) = 20 log E field strength (uV/m).

6.3.2. Test Procedure Used

ANSI C63.10-2013 Section 6.3

ANSI C63.10-2013 Section 6.4

ANSI C63.10-2013 Section 6.5

ANSI C63.10-2013 Section 6.6

ANSI C63.10-2013 Section 7.5

6.3.3. Test Setting

Table 1 - RBW as a function of frequency

Frequency	RBW
9 ~ 150 kHz	200 Hz
0.15 ~ 30 MHz	9 kHz
30 ~ 1000 MHz	120 kHz
> 1000 MHz	1 MHz

Measurements below 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = as specified in Table 1
3. Detector = CISPR quasi-peak (a linear average detector for 9-90 kHz and 110-490 kHz)
4. Sweep time = auto couple
5. Trace was allowed to stabilize

Peak Measurements above 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple

6. Trace mode = max hold

7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest

2. RBW = 1MHz

3. VBW; If the EUT is configured to transmit with duty cycle $\geq 98\%$, set VBW = 10 Hz.

If the EUT duty cycle is $< 98\%$, set VBW $\geq 1/T$. T is the minimum transmission duration.

4. Detector = Peak

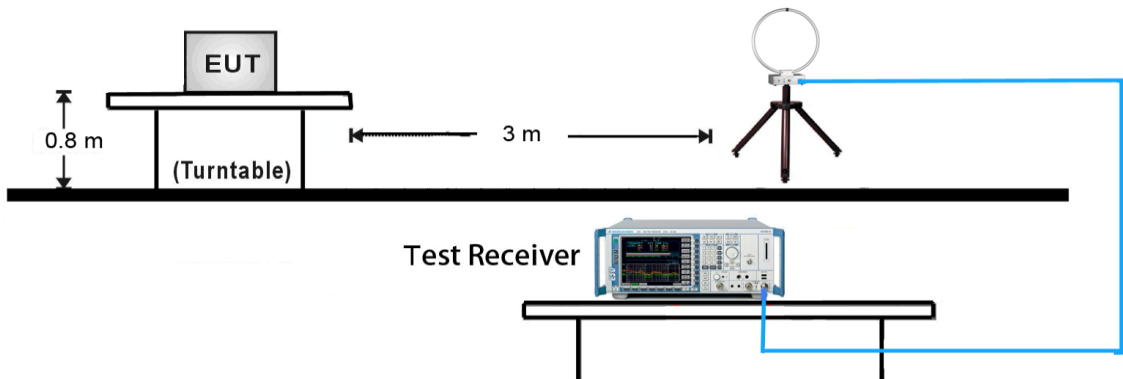
5. Sweep time = auto

6. Trace mode = max hold

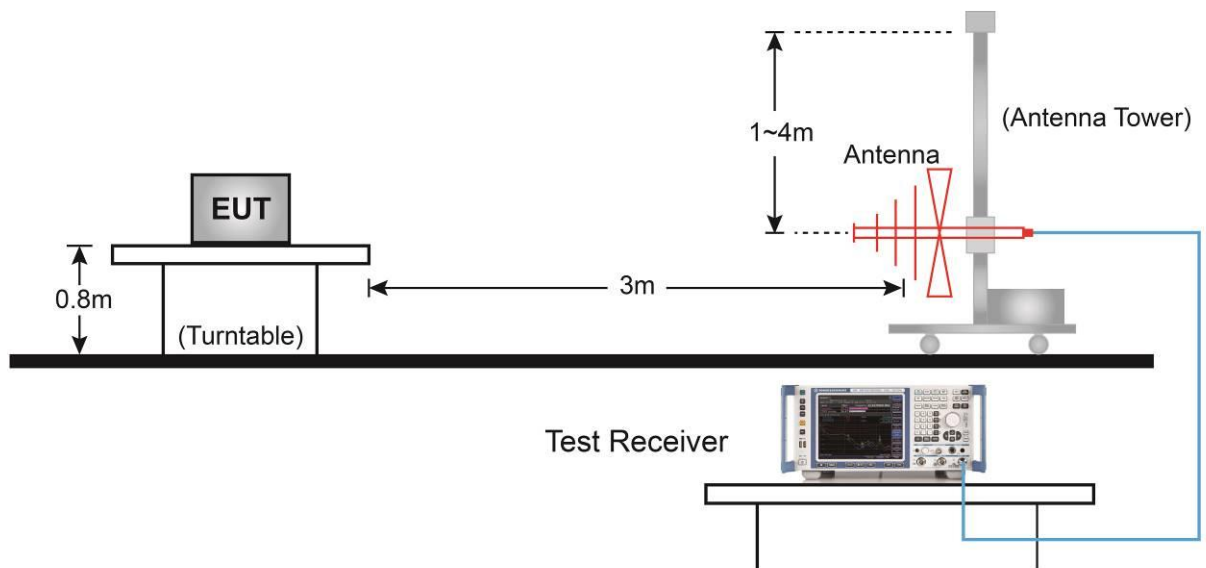
7. Trace was allowed to stabilize

6.3.4. Test Setup

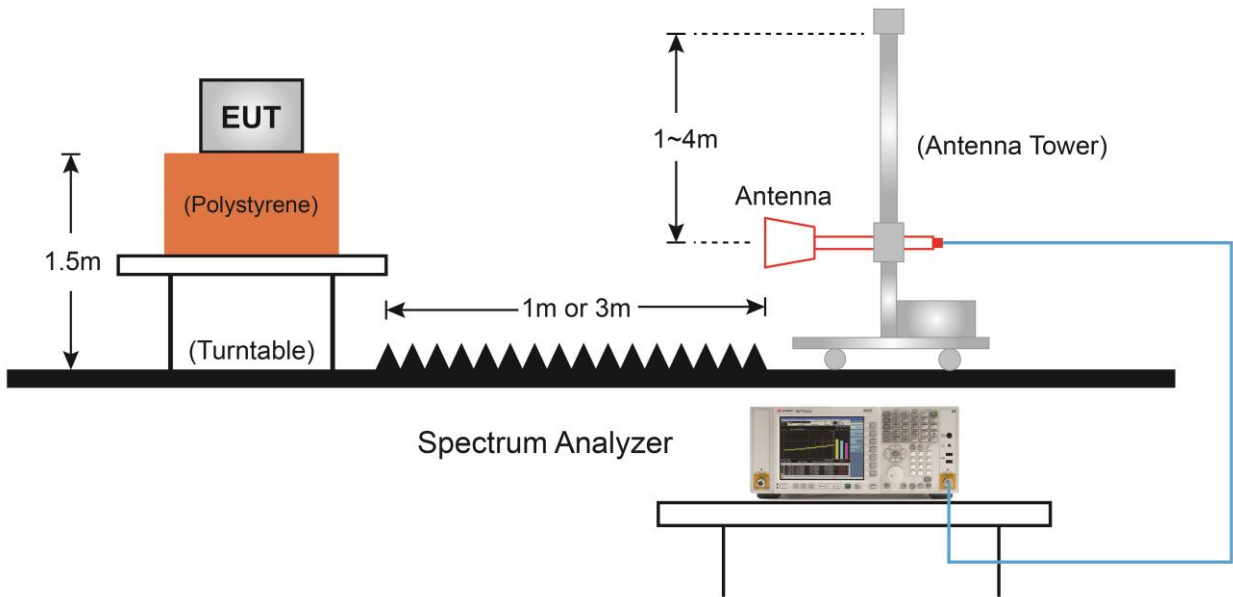
9kHz ~ 30MHz Test Setup:



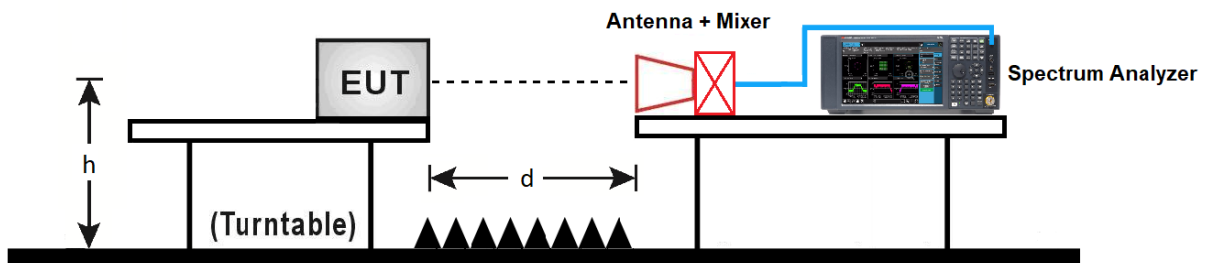
30MHz ~ 1GHz Test Setup:



1GHz ~ 40GHz Test Setup:



Above 40GHz Test Setup:



d = Substitution Distance; h = EUT Height

6.3.5. Test Result

Product	High Performance All-Rounder Traffic Camera	Test Date	2020/10/26
Test Engineer	Ternence Wang	Test Site	SIP-AC2
Remark	Fundamental Radiated Emission		

Frequency (GHz)	Reading Level (dB μ V)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
24.142	122.8	-9.1	113.7	128.0	-14.3	Peak	Horizontal
	63.8	-9.1	54.7	108.0	-53.3	Average	Horizontal
	94.2	-9.1	85.1	128.0	-42.9	Peak	Vertical
	62.2	-9.0	53.2	108.0	-54.8	Average	Vertical

Note: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB)
 Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	High Performance All-Rounder Traffic Camera	Test Date	2020/10/27
Test Engineer	Ternence Wang	Test Site	SIP-AC2
Remark:	Radiated Emission - Below 1GHz (Worst case mode)		

Frequency (MHz)	Reading Level (dB μ V)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
57.3	19.1	13.3	32.4	40.0	-7.6	QP	Horizontal
95.7	18.0	10.3	28.3	43.5	-15.2	QP	Horizontal
140.1	15.2	14.0	29.2	43.5	-14.3	QP	Horizontal
226.9	13.1	11.7	24.8	46.0	-21.2	QP	Horizontal
308.5	11.6	13.8	25.4	46.0	-20.6	QP	Horizontal
710.9	16.2	21.0	37.2	46.0	-8.8	QP	Horizontal
31.6	16.2	13.5	29.7	40.0	-10.3	QP	Vertical
57.6	16.8	13.3	30.1	40.0	-9.9	QP	Vertical
110.1	13.6	11.6	25.2	43.5	-18.3	QP	Vertical
134.4	12.3	13.6	25.9	43.5	-17.6	QP	Vertical
716.9	10.6	21.1	31.7	46.0	-14.3	QP	Vertical
963.2	5.1	23.6	28.7	54.0	-25.3	QP	Vertical

Note:

- Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB)
Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)
- The test trace is same as the ambient noise (the test frequency range: 9kHz ~ 30MHz), therefore no data appear in the report.

Product	High Performance All-Rounder Traffic Camera	Test Date	2020/10/27
Test Engineer	Ternence Wang	Test Site	SIP-AC2
Remark:	Radiated Emission - 1GHz ~ 40GHz		

Frequency (MHz)	Reading Level (dB μ V)	Factor (dB)	Measure Level @ 3m (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
4927.0	69.3	-9.2	60.1	74.0	-13.9	Peak	Horizontal
4927.0	54.3	-9.2	45.1	54.0	-9.9	Average	Horizontal
7383.6	64.4	-6.9	57.5	74.0	-16.5	Peak	Horizontal
7383.6	50.9	-6.9	44.0	54.0	-10.0	Average	Horizontal
37393.0	68.0	-3.9	64.1	74.0	-9.9	Peak	Horizontal
37393.0	53.5	-3.9	49.6	54.0	-4.4	Average	Horizontal
38977.4	66.1	-0.1	66.0	74.0	-8.0	Peak	Horizontal
38977.4	52.7	-0.1	52.6	54.0	-1.4	Average	Horizontal
4264.0	54.3	-9.5	44.8	74.0	-29.2	Peak	Vertical
4923.9	52.8	-9.2	43.6	54.0	-10.4	Average	Vertical
4923.9	70.4	-9.2	61.2	74.0	-12.8	Peak	Vertical
37481.2	67.1	-2.9	64.2	74.0	-9.8	Peak	Vertical
37481.2	54.1	-2.9	51.2	54.0	-2.8	Average	Vertical
39197.1	66.5	-0.1	66.4	74.0	-7.6	Peak	Vertical
39197.1	53.4	-0.1	53.3	54.0	-0.7	Average	Vertical

Note:

- Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB)
Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre-Amplifier Gain (dB)
- Average measurement was not performed when the peak level lower than average limit.
- The amplitude of radiated emissions (frequency range from 9kHz to 30MHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value.
Therefore, the data is not presented in the report.

Product	High Performance All-Rounder Traffic Camera	Test Date	2020/10/27
Test Engineer	Ternence Wang	Test Site	SIP-AC2
Test Range	Radiated Emission - 40GHz ~ 100GHz		

Frequency (GHz)	Reading Level (dB μ V)	Factor (dB)	Measure Level @ 1.5m (dB μ V/m)	Measure Level @ 3m (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
48.1	25.7	46.1	71.8	65.8	88.0	-22.2	Peak	Horizontal
48.1	3.5	46.1	49.6	43.6	68.0	-24.4	Average	Horizontal
72.3	26.0	42.4	68.4	62.4	88.0	-25.6	Peak	Horizontal
72.3	8.9	42.4	51.3	45.3	68.0	-22.7	Average	Horizontal
84.7	27.5	44.3	71.8	65.8	74.0	-8.2	Peak	Horizontal
84.7	8.3	44.3	52.6	46.6	54.0	-7.4	Average	Horizontal
48.4	29.3	45.6	74.9	68.9	88.0	-19.1	Peak	Vertical
48.4	3.6	45.6	49.2	43.2	68.0	-24.8	Average	Vertical
71.8	28.6	42.3	70.9	64.9	74.0	-9.1	Peak	Vertical
71.8	10.1	42.3	52.4	46.4	54.0	-7.6	Average	Vertical
84.2	27.4	44.2	71.6	65.6	74.0	-8.4	Peak	Vertical
84.2	10.5	44.2	54.7	48.7	54.0	-5.3	Average	Vertical

Note:

- Measure Level @ 1.5m (dB μ V/m) = Reading Level (dB μ V) + Factor (dB)
Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) + Mixer Conversion Loss (dB)
- Measure Level @ 3m (dB μ V/m) = Measure Level @ 1.5m (dB μ V/m) + 20 * log (1.5m / 3m) (dB)

6.4. Radiated Restricted Band Edge Measurement

6.4.1. Test Limit

For 15.205 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a).

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41	--	--	--

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [$\mu\text{V}/\text{m}$]	Measured 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

6.4.2. Test Procedure Used

ANSI C63.10-2013 Section 6.3

ANSI C63.10-2013 Section 6.6

ANSI C63.10-2013 Section 11.13

6.4.3. Test Setting

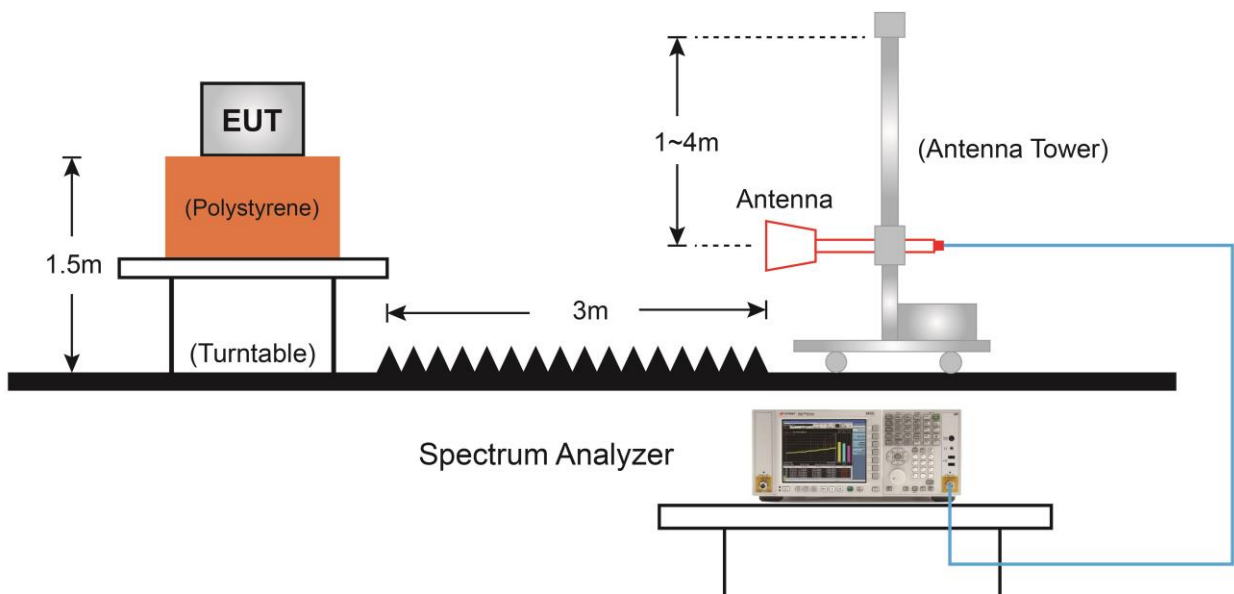
Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Field Strength Measurements

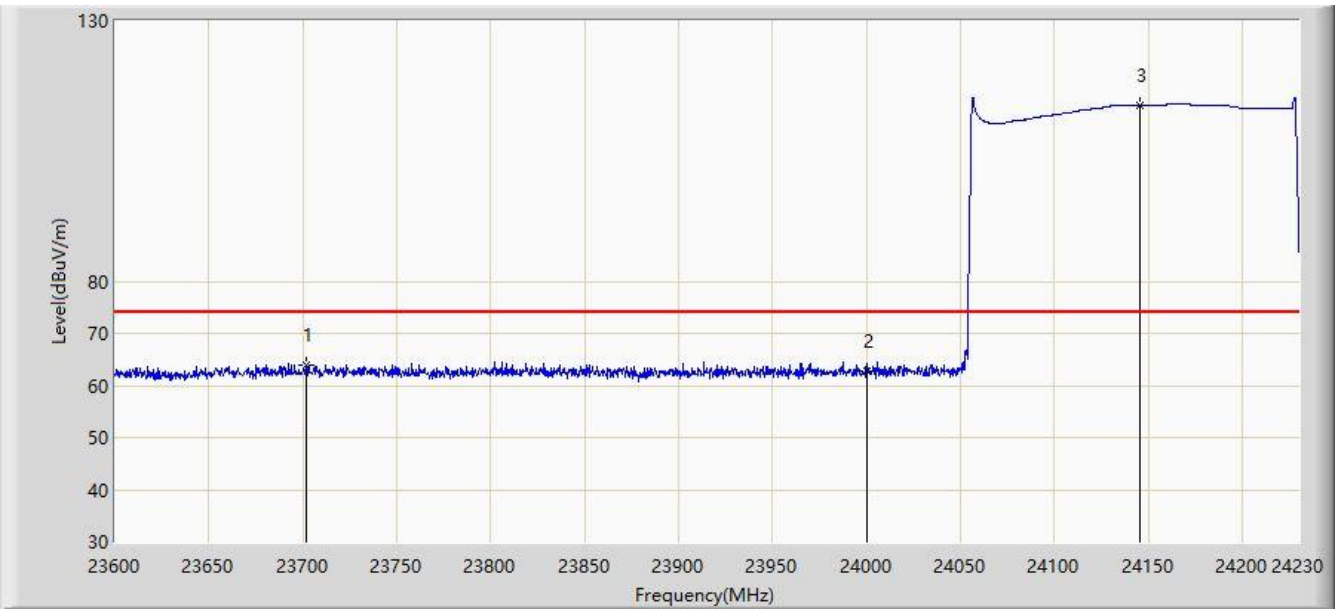
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW $\geq 1/T$
4. As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to "Voltage" regardless of the display mode
5. Detector = Peak
6. Sweep time = auto
7. Trace mode = max hold
8. Allow max hold to run for at least 50 times (1/duty cycle) traces

6.4.4. Test Setup



6.4.5. Test Result

Site: SIP-AC2	Time: 2020/11/16 - 19:30
Limit: FCC_Part15.209_RE(3m)	Engineer: Allen Zou
Probe: SIP-AC2_BBHA9170_18-40GHz (00935)	Polarity: Horizontal
EUT: High Performance All-Rounder Traffic Camera	Power: AC 120V/60Hz
Test Mode: Transmit at channel 24.142GHz	

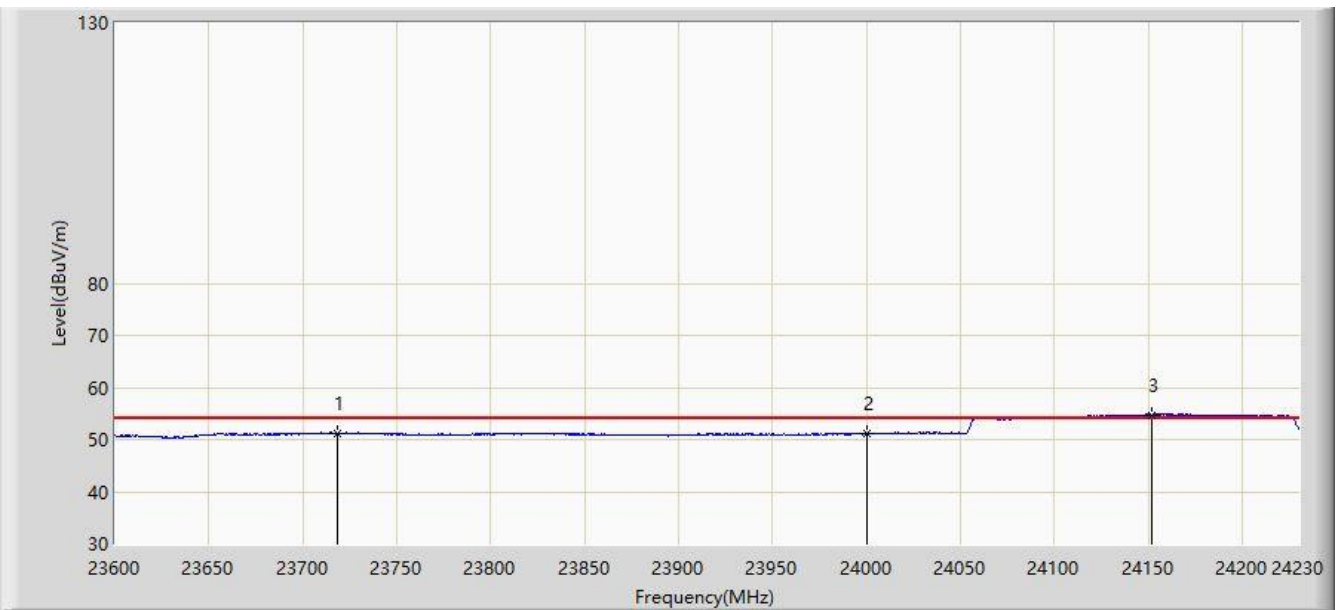


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	23701.744	64.016	73.089	-9.984	74.000	-9.073	PK
2			24000.000	62.681	71.728	-11.319	74.000	-9.047	PK
3			24145.266	113.714	122.830	N/A	N/A	-9.116	PK

Note: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre Amplifier Gain (dB)

Site: SIP-AC2	Time: 2020/11/16 - 19:31
Limit: FCC_Part15.209_RE(3m)	Engineer: Allen Zou
Probe: SIP-AC2_BBHA9170_18-40GHz (00935)	Polarity: Horizontal
EUT: High Performance All-Rounder Traffic Camera	Power: AC 120V/60Hz
Test Mode: Transmit at channel 24.142GHz	

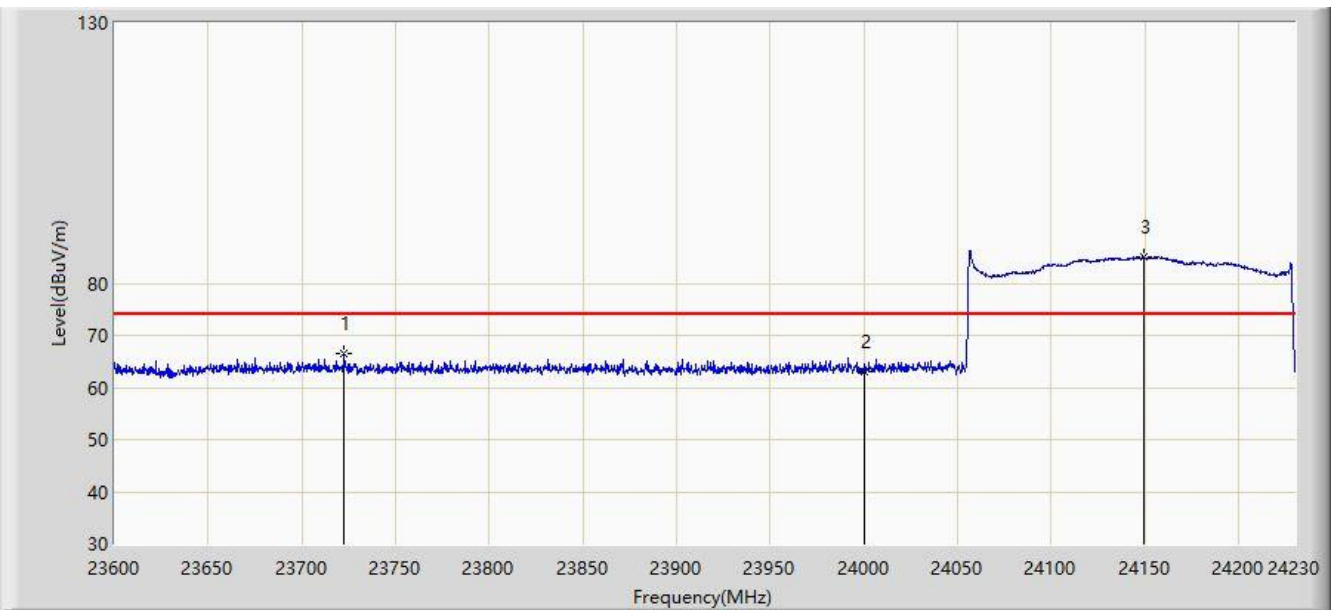


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			23718.439	51.282	60.265	-2.718	54.000	-8.984	AV
2			24000.000	51.200	60.247	-2.800	54.000	-9.047	AV
3		*	24152.195	54.704	63.756	N/A	N/A	-9.052	AV

Note: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre Amplifier Gain (dB)

Site: SIP-AC2	Time: 2020/11/16 - 19:32
Limit: FCC_Part15.209_RE(3m)	Engineer: Allen Zou
Probe: SIP-AC2_BBHA9170_18-40GHz (00935)	Polarity: Vertical
EUT: High Performance All-Rounder Traffic Camera	Power: AC 120V/60Hz
Test Mode: Transmit at channel 24.142GHz	

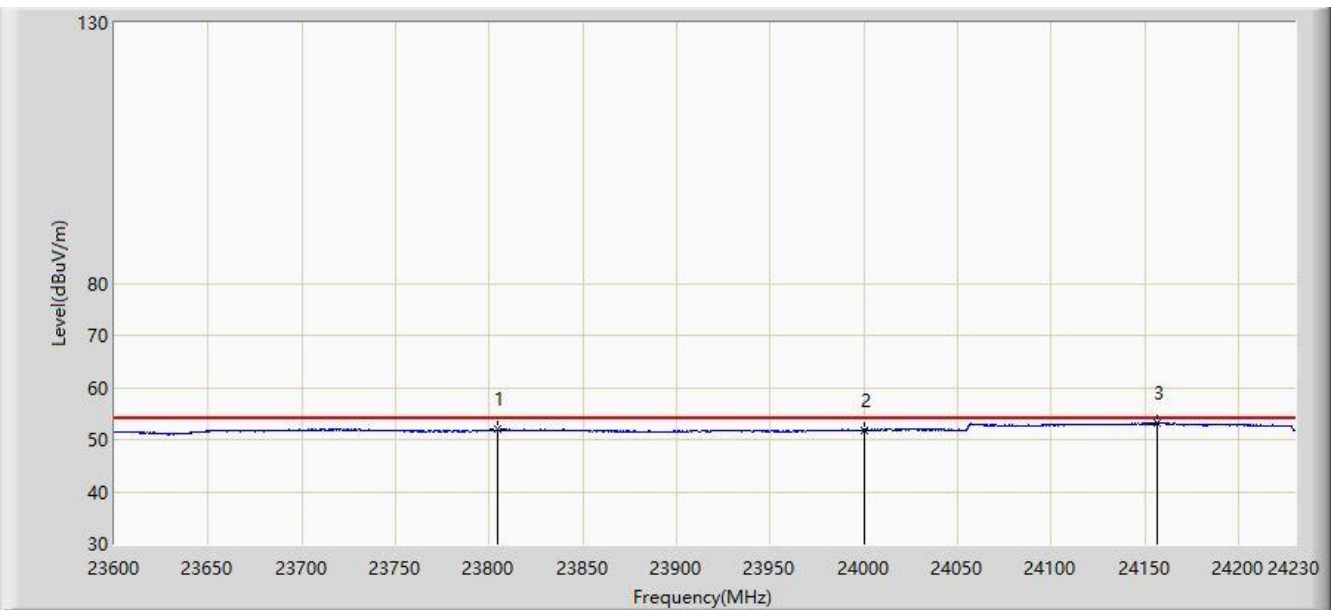


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			23722.535	66.524	75.515	-7.476	74.000	-8.991	PK
2			24000.000	62.989	72.036	-11.011	74.000	-9.047	PK
3		*	24149.359	85.169	94.247	N/A	N/A	-9.078	PK

Note: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre Amplifier Gain (dB)

Site: SIP-AC2	Time: 2020/11/16 - 19:34
Limit: FCC_Part15.209_RE(3m)	Engineer: Allen Zou
Probe: SIP-AC2_BBHA9170_18-40GHz (00935)	Polarity: Vertical
EUT: High Performance All-Rounder Traffic Camera	Power: AC 120V/60Hz
Test Mode: Transmit at channel 24.142GHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			23804.750	51.897	60.917	-2.103	54.000	-9.019	AV
2			24000.000	51.794	60.841	-2.206	54.000	-9.047	AV
3		*	24156.289	53.145	62.160	N/A	N/A	-9.015	AV

Note: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre Amplifier Gain (dB)

6.5. 20dB Spectrum Bandwidth Measurement

6.5.1. Test Limit

Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emission in the specific band.

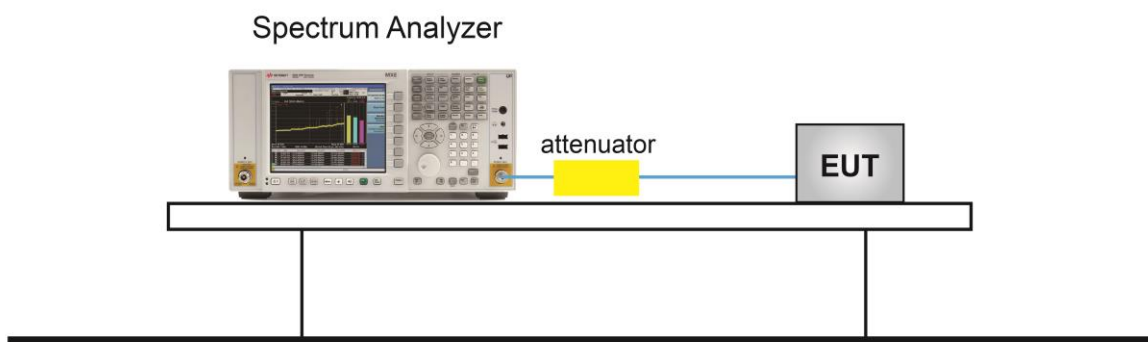
6.5.2. Test Procedure used

ANSI C63.10-2013 Clause 6.9.2

6.5.3. Test Setting

1. Set the spectrum span range to overlap the nominal center frequency
2. Set RBW = 1% ~ 5% of the OBW
3. VBW $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace to stabilize and marker the highest level
8. Determine the display level (the highest level - 20dB) and place two markers, one at the lowest frequency and the other at the highest frequency

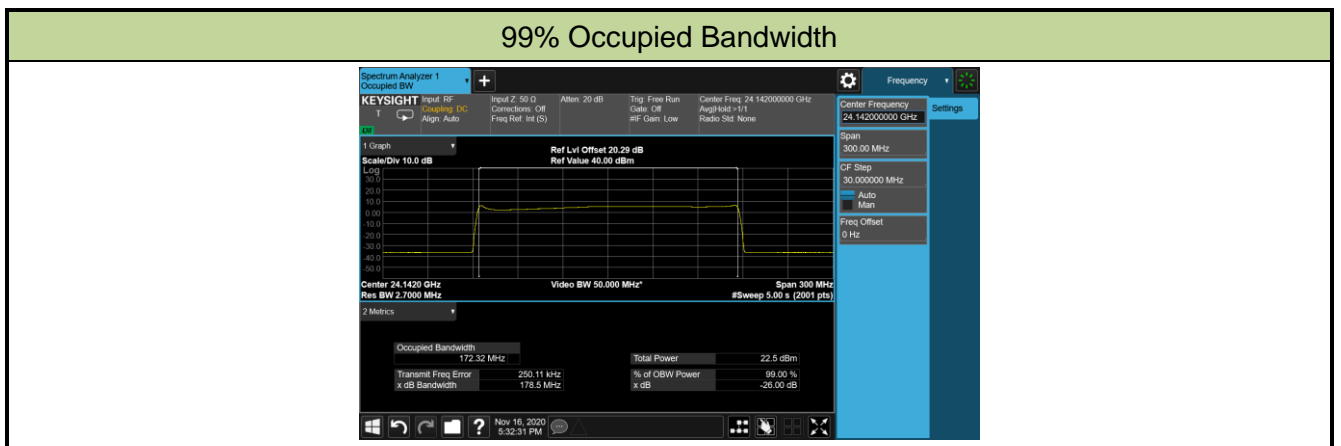
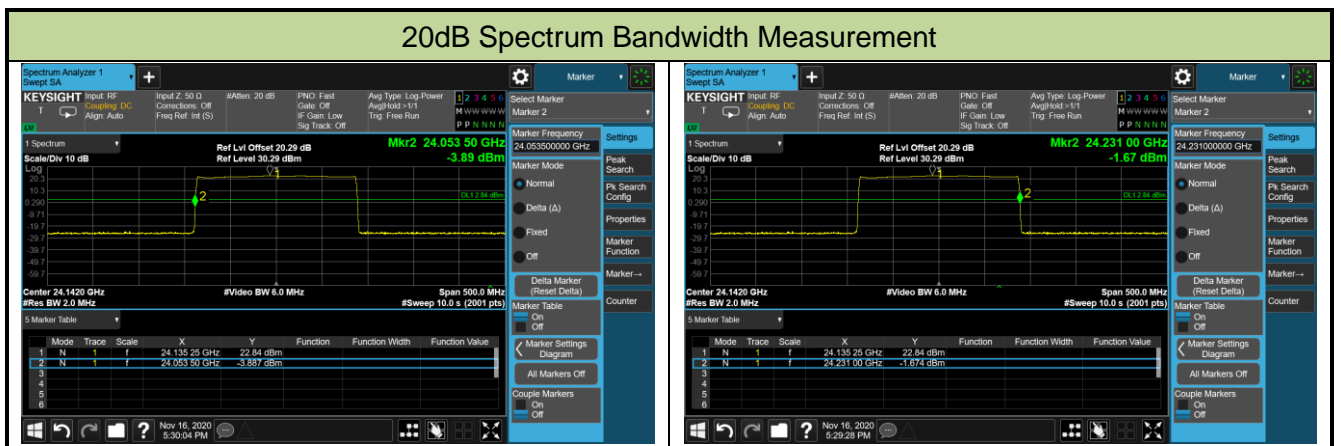
6.5.4. Test Setup



6.5.5. Test Result

Product	High Performance All-Rounder Traffic Camera	Test Date	2020/11/16
Test Engineer	Ternence Wang	Test Site	SIP-AC2

Frequency (GHz)	Frequency Range (MHz)	Frequency Range (MHz)	Limit (MHz)	Result
24.142	24053.5	--	> 24000.0	Pass
24.142	--	24231.0	< 24250.0	Pass



7. CONCLUSION

The data collected relate only the item(s) tested and show that this device is compliance with Part 15.249 of the FCC Rules.

Appendix A - Test Setup Photograph

Refer to "2010RSU048-UT" file.

Appendix B - EUT Photograph

Refer to "2010RSU048-UE" file.