

# Shenzhen Toby Technology Co., Ltd.

Report No.: TB-FCC144022

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# **FCC Radio Test Report** FCC ID: 2AEP6XM-JPL1-1

# **Original Grant**

Report No. TB-FCC144022

HangZhou XiongMai Technology CO., LTD **Applicant** 

**Equipment Under Test (EUT)** 

**EUT Name** CAR DVR

Model No. XM-JPL1-1

Please see the page of 4 Serial No.

**Brand Name** XM

**Receipt Date** 2015-04-27

2015-04-28 to 2015-05-08 **Test Date** 

**Issue Date** 2015-05-09

**Standards** FCC Part 15, Subpart C (15.247:2014)

**Test Method** ANSI C63.10: 2013

**PASS Conclusions** 

In the configuration tested, the EUT complied with the standards specified above,

The EUT technically complies with the FCC and IC requirements

**Test/Witness Engineer** 

Approved&

**Authorized** 

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

TB-RF-074-1.0

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# 1. General Information about EUT

### 1.1 Client Information

**Applicant** : HangZhou XiongMai Technology CO., LTD

Address : 9th Floor, Building 9, Yinhu Innovation Center, No.9 FuXian Road,

YinHu Street, Hangzhou, China

: HangZhou XiongMai Technology CO., LTD Manufacturer

: 9th Floor, Building 9, Yinhu Innovation Center, No.9 FuXian Road, Address

YinHu Street, Hangzhou, China

## 1.2 General Description of EUT (Equipment Under Test)

<b>EUT Name</b>	1	CAR DVR	COLUMN TO THE PARTY OF THE PART	
Models No.	7	XM-JPL1-1, XM-JPL1S-2K, XMJPL1S-4K, XM-JPL1, XM-JPL1S, XM-JPL2, XM-JPL2S, L1-1, L1S-2K, L1S-4K, L1, L1S, L2, L2S		
Model Difference	:\	All models are identical in the same PCB layout, interior structure and electrical circuits, the only difference is model name for commercial purpose.		
	1000	Operation Frequency: 802.11b/g/n(HT20): 2412MHz~2462MHz		
		Number of Channel:	802.11b/g/n(HT20):11 channels see note(3)	
Product		RF Output Power:	802.11b: 15.30 dBm 802.11g: 13.41 dBm 802.11n (HT20): 12.16 dBm	
Description		Antenna Gain:	2 dBi (FPC Antenna)	
OBY		Modulation Type:	802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g: QPSK, BPSK, 16QAM, 64QAM 802.11n: QPSK, BPSK, 16QAM, 64QAM	
		Bit Rate of	802.11b:11/5.5/2/1 Mbps	
		Transmitter:	802.11g:54/48/36/24/18/12/9/6 Mbps 802.11n:up to 150Mbps	
Power Supply	:			
Power Rating	:	Input: DC12~24V, 1.5A USB1 output: DC 5V, 1A USB2 output: DC 5V, 2.1A		
Connecting I/O Port(S)		Please refer to the User's Manual		

Note: More detailed features description, please refer to the manufacturer's specifications or the User's

Manual.



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### Note:

(1) This Test Report is FCC Part 15.247 for 802.11b/g/n, the test procedure follows the FCC KDB 558074 D01 DTS Meas Guidance v03r02.

(2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

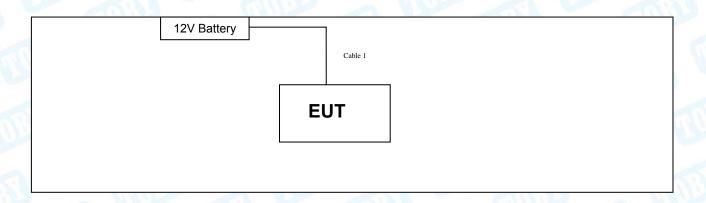
(3) Channel List:

			(MHz)
05	2432	09	2452
06	2437	10	2457
07	2442	11	2462
08	2447		
	<b>06</b> 07	06     2437       07     2442	06     2437     10       07     2442     11

(4) The Antenna information about the equipment is provided by the applicant.

# 1.3 Block Diagram Showing the Configuration of System Tested

#### **TX Mode**





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# 1.4 Description of Support Units

Equipment Information							
Name	Name Model S/N Manufacturer Used "√"						
UPP -	133						
	Cable Information						
Number Shielded Type Ferrite Core Length Note							
Cable 1	NO	NO	1.0M	Accessories			

### 1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

For Conducted Test				
Final Test Mode	Description			
Mode 1	DC Charging with TX B Mode			

For Radiated Test					
Final Test Mode Description					
Mode 3 TX Mode B Mode Channel 01/06/11					
Mode 4 TX Mode G Mode Channel 01/06/11					
Mode 5 TX Mode N(HT20) Mode Channel 01/06/11					
Remark: The EUT have been pretested powered by DC 12V and DC 24V separately, and found the worst mode was when the EUT powered by DC 12V, so only showed the worst mode test data in this report.					

#### Note:

(1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.

According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels, and the worst case data rate as follows:

802.11b Mode: CCK (1 Mbps) 802.11g Mode: OFDM (6 Mbps)

802.11n (HT20) Mode: MCS 0 (6.5 Mbps)

(2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.



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(3) The EUT is considered a mobile unit; in normal use it was positioned on X-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.

## 1.6 Description of Test Software Setting

During testing channel& Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of WLAN.

Test Software Version	Realtek 11n Single Chip 92C USB WLAN MP Diagnostic Program			
Channel	CH 01	CH 06	CH 11	
IEEE 802.11b DSSS	DEF	DEF	DEF	
IEEE 802.11g OFDM	DEF	DEF	DEF	
IEEE 802.11n (HT20)	DEF	DEF	DEF	

## 1.7 Measurement Uncertainty

The reported uncertainty of measurement y  $\pm$  U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

Test Item	Parameters	Expanded Uncertainty (U <sub>Lab</sub> )
	Level Accuracy:	
Conducted Emission	9kHz~150kHz	±3.42 dB
	150kHz to 30MHz	±3.42 dB
Dadiated Emission	Level Accuracy:	14 60 dD
Radiated Emission	9kHz to 30 MHz	±4.60 dB
Dedicted Emission	Level Accuracy:	14 40 dD
Radiated Emission	30MHz to 1000 MHz	±4.40 dB
Radiated Emission	Level Accuracy:	±4.20 dB
Radiated Ellission	Above 1000MHz	±4.20 UB



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# 1.7 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

#### **CNAS (L5813)**

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

### FCC List No.: (811562)

The Laboratory is listed in the United States of American Federal Communications Commission (FCC), and the registration number is 811562.

### IC Registration No.: (11950A-1)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A-1.

May 22, 2014 certificated by TUV Rheinland(China) Co., Ltd. with TUV certificate No.: UA 50282953 0001 and report No.: 17026822 002. The certificate is valid until the next scheduled audit or up to 18 months, at the discretion of TUV Rhineland.



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# 2. Test Summary

Standa	rd Section			Remark
FCC	IC	Test Item	Judgment	
15.203	1	Antenna Requirement	PASS	N/A
15.207	RSS-GEN 7.2.4	Conducted Emission	PASS	N/A
15.205	RSS-GEN 7.2.2	Restricted Bands	PASS	N/A
15.247(a)(2)	RSS-210 A.8.2(a)	6dB Bandwidth	PASS	N/A
15.247(b)	RSS-210 A.8.4(4)	Peak Output Power	PASS	N/A
15.247(e)	RSS-210 A.8.2(b)	Power Spectral Density	PASS	N/A
15.247(d)	RSS-210 Annex 8 (A8.5)	Transmitter Radiated Spurious Emission	PASS	N/A
15.247(d)	RSS-210 Annex 8 (A8.5)	Antenna Conducted Spurious Emission	PASS	N/A

N/A is an abbreviation for Not Applicable.



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# 3. Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	ROHDE& SCHWARZ	ESCI	100321	Aug. 08, 2014	Aug.07, 2015
50ΩCoaxial Switch	Anritsu	MP59B	X10321	Aug. 08, 2014	Aug.07, 2015
L.I.S.N	Rohde & Schwarz	ENV216	101131	Aug. 08, 2014	Aug.07, 2015
L.I.S.N	SCHWARZBECK	NNBL 8226-2	8226-2/164	Aug. 08, 2014	Aug.07, 2015
Spectrum Analyzer	Agilent	E4407B	MY45106456	Aug. 08, 2014	Aug.07, 2015
Spectrum Analyzer	Rohde & Schwarz	FSP30	DE25181	Aug. 08, 2014	Aug.07, 2015
EMI Test Receiver	Rohde & Schwarz	ESCI	101165	Aug. 08, 2014	Aug.07, 2015
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar. 06, 2015	Mar.05, 2016
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar. 06, 2015	Mar.05, 2016
Pre-amplifier	HP	11909A	185903	Mar. 06, 2015	Mar.05, 2016
Pre-amplifier	HP	8447B	3008A00849	Mar. 06, 2015	Mar.05, 2016
Cable	HUBER+SUHNE R	100	SUCOFLEX	Mar. 06, 2015	Mar.05, 2016
Signal Generator	Rohde & Schwarz	SML03	IKW682-054	Feb. 10, 2015	Feb.09, 2016
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A



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# 4. Conducted Emission Test

### 4.1 Test Standard and Limit

4.1.1Test Standard FCC Part 15.207

#### 4.1.2 Test Limit

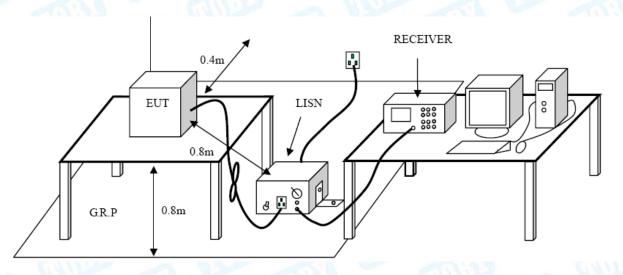
### **Conducted Emission Test Limit**

	Maximum RF Line Voltage (dBμV)		
Frequency	Quasi-peak Level	Average Level	
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *	
500kHz~5MHz	56	46	
5MHz~30MHz	60	50	

#### Notes:

- (1) \*Decreasing linearly with logarithm of the frequency.
- (2) The lower limit shall apply at the transition frequencies.
- (3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### 4.2 Test Setup



### 4.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.



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I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

# 4.4 EUT Operating Mode

Please refer to the description of test mode.

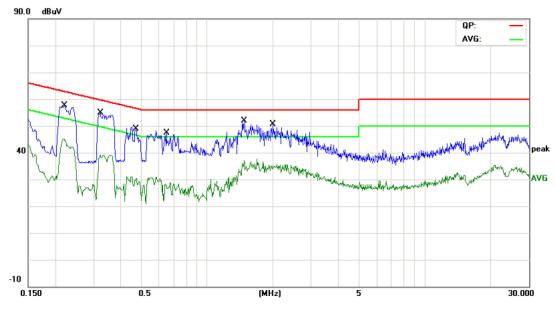
### 4.5 Test Data

Please see the next page.



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١	EUT:	CAR DVR	Model Name :	XM-JPL1-1					
	Temperature:	25 ℃	Relative Humidity:	55%					
	Test Voltage:	DC 12V							
	Terminal:	Line							
4	Test Mode:	DC Charging with TX B Mode							
	Remark:	Only worse case is repor	Only worse case is reported						



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.2220	47.06	10.59	57.65	62.74	-5.09	QP
2		0.2220	33.95	10.59	44.54	52.74	-8.20	AVG
3		0.3234	44.78	10.22	55.00	59.62	-4.62	QP
4		0.3234	28.73	10.22	38.95	49.62	-10.67	AVG
5		0.4700	38.84	10.03	48.87	56.51	-7.64	QP
6		0.4700	20.46	10.03	30.49	46.51	-16.02	AVG
7		0.6500	37.39	9.95	47.34	56.00	-8.66	QP
8		0.6500	16.62	9.95	26.57	46.00	-19.43	AVG
9	*	1.4780	41.88	9.89	51.77	56.00	-4.23	QP
10		1.4780	27.20	9.89	37.09	46.00	-8.91	AVG
11		2.0059	40.80	9.88	50.68	56.00	-5.32	QP
12		2.0059	25.28	9.88	35.16	46.00	-10.84	AVG

<sup>\*:</sup>Maximum data x:Over limit !:over margin



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EUT:	CAR DVR	Mo	del Name :		XM-JPL1-	-1
Temperature:	25 ℃	Re	lative Humid	dity:	55%	Alle
Test Voltage:	DC 12V	-	10	G	COLI	
Terminal:	Neutral	AMOR		16		
Test Mode:	DC Charging with	n TX B Mode		>	0 N	LU
Remark:	Only worse case	is reported	1	600	199	
90.0 dBuV						
					QP: AVG:	
M Ma						+
The second second	<b>∆Ĭ</b> n	A MANAGARA				JAN UNIVA
40	Jan Lynn Market	Chil. Lathart	Whapmon and and a second	die e e author	Maria de la Calenda de la Cale	pea
	Ma .	My my promised the second	T T WHANKING	motivities and a	ay	AND THE AVE
WW M	1 "Warney Johnson	A <sup>nt</sup>	and the state of the state of	splinessistemistik	and of the section	
	1 1 1 1					
-10						
0.150	0.5	(MHz)	5			30.000
	Reading	Correct	Measure-	Limit	Over	
	eq. Level	Factor dB	ment		dB	Detector
	nz abuv	ab	dBuV	dBu∀	uв	Detector
		10.17	EZ 0Z	60.00	4.04	00
	403 47.40	10.47	57.87	62.08	-4.21	QP
2 0.24	403 47.40 403 32.66	10.47	43.13	52.08	-8.95	AVG
2 0.24 3 * 0.33	403 47.40 403 32.66 339 45.52	10.47	43.13 55.73	52.08 59.35	-8.95 -3.62	AVG QP
2 0.24 3 * 0.33 4 0.33	403 47.40 403 32.66 339 45.52 339 30.46	10.47 10.21 10.21	43.13 55.73 40.67	52.08 59.35 49.35	-8.95 -3.62 -8.68	AVG QP AVG
2 0.24 3 * 0.33 4 0.33 5 0.45	403 47.40 403 32.66 339 45.52 339 30.46 500 41.44	10.47 10.21 10.21 10.06	43.13 55.73 40.67 51.50	52.08 59.35 49.35 56.87	-8.95 -3.62 -8.68 -5.37	AVG QP AVG QP
2 0.24 3 * 0.33 4 0.33 5 0.45 6 0.45	403 47.40 403 32.66 339 45.52 339 30.46 500 41.44 500 22.99	10.47 10.21 10.21 10.06 10.06	43.13 55.73 40.67 51.50 33.05	52.08 59.35 49.35 56.87 46.87	-8.95 -3.62 -8.68 -5.37 -13.82	AVG QP AVG QP AVG
2 0.24 3 * 0.33 4 0.33 5 0.45 6 0.45 7 1.47	403 47.40 403 32.66 339 45.52 339 30.46 500 41.44 500 22.99 779 42.38	10.47 10.21 10.21 10.06 10.06 9.89	43.13 55.73 40.67 51.50 33.05 52.27	52.08 59.35 49.35 56.87 46.87 56.00	-8.95 -3.62 -8.68 -5.37 -13.82 -3.73	AVG QP AVG QP AVG
2 0.24 3 * 0.33 4 0.33 5 0.45 6 0.45 7 1.47 8 1.47	403 47.40 403 32.66 339 45.52 339 30.46 500 41.44 500 22.99 779 42.38 779 27.70	10.47 10.21 10.21 10.06 10.06 9.89 9.89	43.13 55.73 40.67 51.50 33.05 52.27 37.59	52.08 59.35 49.35 56.87 46.87 56.00 46.00	-8.95 -3.62 -8.68 -5.37 -13.82 -3.73 -8.41	AVG QP AVG QP AVG QP AVG
2 0.24 3 * 0.33 4 0.33 5 0.45 6 0.45 7 1.47 8 1.47 9 2.00	403 47.40 403 32.66 339 45.52 339 30.46 500 41.44 500 22.99 779 42.38 779 27.70 059 41.80	10.47 10.21 10.21 10.06 10.06 9.89	43.13 55.73 40.67 51.50 33.05 52.27 37.59 51.68	52.08 59.35 49.35 56.87 46.87 56.00 46.00	-8.95 -3.62 -8.68 -5.37 -13.82 -3.73 -8.41 -4.32	AVG QP AVG QP AVG
2 0.24 3 * 0.33 4 0.33 5 0.45 6 0.45 7 1.47 8 1.47	403 47.40 403 32.66 339 45.52 339 30.46 500 41.44 500 22.99 779 42.38 779 27.70 059 41.80	10.47 10.21 10.21 10.06 10.06 9.89 9.89	43.13 55.73 40.67 51.50 33.05 52.27 37.59	52.08 59.35 49.35 56.87 46.87 56.00 46.00	-8.95 -3.62 -8.68 -5.37 -13.82 -3.73 -8.41 -4.32	AVG QP AVG QP AVG QP AVG
2 0.24 3 * 0.33 4 0.33 5 0.45 6 0.45 7 1.47 8 1.47 9 2.00	403 47.40 403 32.66 339 45.52 339 30.46 500 41.44 500 22.99 779 42.38 779 27.70 059 41.80 059 26.28	10.47 10.21 10.21 10.06 10.06 9.89 9.89 9.88	43.13 55.73 40.67 51.50 33.05 52.27 37.59 51.68	52.08 59.35 49.35 56.87 46.87 56.00 46.00 46.00	-8.95 -3.62 -8.68 -5.37 -13.82 -3.73 -8.41 -4.32	AVG QP AVG QP AVG QP AVG QP



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EUT:	CAR DVR	M	odel Name :	XM-JPL1	I-1
Temperature:	25 ℃	Re	elative Humidity:	55%	Can'l
Гest Voltage:	DC 24V	100	OHIT SE		A Brown
Terminal:	Line		13 - 6	THE	
Test Mode:	DC Charging wit	th TX B Mod	le	Contract of	
Remark:	Only worse case	e is reported	WILLIAM STATE	-01	1811
90.0 dBuV					
40	LAMMAN MANANTAN	har romen programme all	of the information of the contract of the cont	QP: AVG:	pea
0.150 No. Mk. F	Reading Level	(MHz)  Correct Factor  dB	Measure- ment Limi		30.000 Detector
0.150 No. Mk. F	Reading req. Level	Correct Factor	Measure- ment Limi	/ dB	
0.150 No. Mk. F	Reading req. Level	Correct Factor	Measure- ment Limi	/ dB 8 -2.21	Detector
0.150  No. Mk. F  1 * 0.2  2 0.2	Reading Level MHz dBuV 2403 49.40	Correct Factor dB	Measurement Limit dBuV dBuV 59.87 62.0	/ dB 8 -2.21 8 -6.95	Detector
0.150  No. Mk. F  1 * 0.2  2 0.2  3 0.3	Reading Level MHz dBuV 2403 49.40 2403 34.66	Correct Factor dB 10.47	Measurement         Limi           dBuV         dBuV           59.87         62.0           45.13         52.0	/ dB 8 -2.21 8 -6.95 8 -3.66	Detector QP AVG
0.150  No. Mk. F  1 * 0.2  2 0.2  3 0.3  4 0.3	Reading Level MHz dBuV 2403 49.40 2403 34.66 3620 44.84	Correct Factor dB 10.47 10.47	Measurement         Limi           dBuV         dBuV           59.87         62.0           45.13         52.0           55.02         58.6	/ dB 8 -2.21 8 -6.95 8 -3.66 8 -8.77	Detector QP AVG QP
0.150  No. Mk. F  1 * 0.2  2 0.2  3 0.3  4 0.3  5 0.4	Reading Level MHz dBuV 2403 49.40 2403 34.66 3620 44.84 3620 29.73	Correct Factor dB 10.47 10.47 10.18	Measurement         Limi           dBuV         dBuV           59.87         62.0           45.13         52.0           55.02         58.6           39.91         48.6	dB 8 -2.21 8 -6.95 8 -3.66 8 -8.77 7 -4.87	Detector QP AVG QP AVG
0.150  No. Mk. F  1 * 0.2  2 0.2  3 0.3  4 0.3  5 0.4  6 0.4	Reading Level MHz dBuV 2403 49.40 2403 34.66 3620 44.84 3620 29.73 4500 41.94	Correct Factor dB 10.47 10.47 10.18 10.18	Measurement         Limited           dBuV         dBuV           59.87         62.0           45.13         52.0           55.02         58.6           39.91         48.6           52.00         56.8	dB 8 -2.21 8 -6.95 8 -3.66 8 -8.77 7 -4.87 7 -13.32	Detector QP AVG QP AVG
0.150  No. Mk. F  1 * 0.2  2 0.2  3 0.3  4 0.3  5 0.4  6 0.4  7 0.8	Reading Level MHz dBuV 2403 49.40 2403 34.66 3620 44.84 3620 29.73 4500 41.94	Correct Factor dB 10.47 10.47 10.18 10.18 10.06	Measurement     Limited       dBuV     dBuV       59.87     62.0       45.13     52.0       55.02     58.6       39.91     48.6       52.00     56.8       33.55     46.8	dB 8 -2.21 8 -6.95 8 -3.66 8 -8.77 7 -4.87 7 -13.32 0 -3.53	Detector QP AVG QP AVG QP AVG
0.150  No. Mk. F  1 * 0.2  2 0.2  3 0.3  4 0.3  5 0.4  6 0.4  7 0.8  8 0.8	Reading Level MHz dBuV 2403 49.40 2403 34.66 3620 44.84 3620 29.73 4500 41.94 4500 23.49 3460 42.53	Correct Factor dB 10.47 10.47 10.18 10.18 10.06 10.06	Measurement         Liminal           dBuV         dBuV           59.87         62.0           45.13         52.0           55.02         58.6           39.91         48.6           52.00         56.8           33.55         46.8           52.47         56.0	dB 8 -2.21 8 -6.95 8 -3.66 8 -8.77 7 -4.87 7 -13.32 0 -3.53 0 -10.04	Detector QP AVG QP AVG QP AVG QP
0.150  No. Mk. F  1 * 0.2  2 0.2  3 0.3  4 0.3  5 0.4  6 0.4  7 0.8  8 0.8  9 1.4	Reading Level MHz dBuV 2403 49.40 2403 34.66 3620 44.84 3620 29.73 4500 41.94 3460 42.53 3460 26.02	Correct Factor  dB  10.47  10.47  10.18  10.06  10.06  9.94  9.94	Measurement         Limited           dBuV         dBuV           59.87         62.0           45.13         52.0           55.02         58.6           39.91         48.6           52.00         56.8           33.55         46.8           52.47         56.0           35.96         46.0	dB 8 -2.21 8 -6.95 8 -3.66 8 -8.77 7 -4.87 7 -13.32 0 -3.53 0 -10.04 0 -3.23	Detector QP AVG QP AVG QP AVG AVG
No. Mk. F  1 * 0.2 2 0.2 3 0.3 4 0.3 5 0.4 6 0.4 7 0.8 8 0.8 9 1.4	Reading Level MHz dBuV 2403 49.40 2403 34.66 3620 44.84 3620 29.73 3500 41.94 3500 23.49 3460 42.53 3460 26.02	Correct Factor  dB  10.47  10.47  10.18  10.06  10.06  9.94  9.94  9.89	Measurement     Limit       dBuV     dBuV       59.87     62.0       45.13     52.0       55.02     58.6       39.91     48.6       52.00     56.8       33.55     46.8       52.47     56.0       35.96     46.0       52.77     56.0       38.09     46.0	dB 8 -2.21 8 -6.95 8 -3.66 8 -8.77 7 -4.87 7 -13.32 0 -3.53 0 -10.04 0 -3.23	Detector QP AVG QP AVG QP AVG QP AVG QP AVG



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EUT:	CAR	DVR	M	odel Name		XM-JPL1	-1	
Temperature:	25 °	25 °C Relative Humidity: 55%						
Test Voltage:	DC 2	DC 24V						
Terminal:	Neut	tral	MAIL					
Test Mode:	DC (	Charging wit	h TX B Mod	e (NA)	9	~ N	RIVE	
Remark:	Only	worse case	is reported	-		199		
90.0 dBuV								
40	a Marka	The same of the of	My marine	Maripara and polyage assisted	spilde spipele spilded	QP: AVG:	pea AVI	
0.150	0.5 Freq	Reading	(MHz)  Correct	Measure-		Over	30.000	
	0.5  Freq.	Reading Level			Limit	Over	30.000	
0.150 No. Mk.	Freq.	Level	Correct Factor	Measure- ment	Limit			
0.150 No. Mk.	Freq.	Level dBuV	Correct Factor	Measure- ment	Limit dBuV	dB	Detector	
0.150  No. Mk.  1 * (2	Freq. MHz 0.2380	dBuV 49.44	Correct Factor dB 10.49	Measure- ment dBuV 59.93	dBuV 62.16	dB -2.23	Detector	
0.150  No. Mk.  1 * ( 2 ( 3 (	Freq. MHz 0.2380	Level dBuV 49.44 34.72	Correct Factor dB 10.49	Measure- ment dBuV 59.93 45.21	dBuV 62.16 52.16	dB -2.23 -6.95	Detector QP AVG	
0.150  No. Mk.  1 * ( 2 ( 3 ( 4 ( )	Freq. MHz D.2380 D.2380 D.3220	Level dBuV 49.44 34.72 46.27	Correct Factor dB 10.49 10.49	Measure- ment dBuV 59.93 45.21 56.50	dBuV 62.16 52.16 59.65	dB -2.23 -6.95 -3.15	Detector QP AVG QP	
0.150  No. Mk.  1 * ( 2 ( 3 ( 4 ( 5 ( 6 ( 6 ( 6 ( 6 ( 6 ( 6 ( 6 ( 6 ( 6 ( 6	Freq. MHz 0.2380 0.2380 0.3220 0.3220	Level  dBuV  49.44  34.72  46.27  30.22	Correct Factor dB 10.49 10.49 10.23	Measure- ment dBuV 59.93 45.21 56.50 40.45	Limit  dBuV  62.16  52.16  59.65  49.65	dB -2.23 -6.95 -3.15 -9.20 -7.15	Detector QP AVG QP AVG	
0.150  No. Mk.  1 * (2 (3 4 (6 5 (6 (6 (6 (6 (6 (6 (6 (6 (6 (6 (6 (6 (6	Freq. MHz 0.2380 0.2380 0.3220 0.3220 0.4260	Level  dBuV  49.44  34.72  46.27  30.22  40.08	Correct Factor dB 10.49 10.23 10.23 10.10	Measure- ment  dBuV  59.93  45.21  56.50  40.45  50.18	Limit  dBuV  62.16  52.16  59.65  49.65  57.33	dB -2.23 -6.95 -3.15 -9.20 -7.15	Detector QP AVG QP AVG	
0.150  No. Mk.  1 * (2 )  3 (4 )  5 (6 )  7 (7 )	Freq. MHz 0.2380 0.2380 0.3220 0.3220 0.4260 0.4260	Level  dBuV  49.44  34.72  46.27  30.22  40.08  21.99	Correct Factor dB 10.49 10.49 10.23 10.23 10.10	Measure- ment dBuV 59.93 45.21 56.50 40.45 50.18 32.09	Limit dBuV 62.16 52.16 59.65 49.65 57.33 47.33	dB -2.23 -6.95 -3.15 -9.20 -7.15 -15.24 -5.03	Detector QP AVG QP AVG QP AVG	
0.150  No. Mk.  1 * (2 (3 (4 (6 (6 (6 (6 (6 (6 (6 (6 (6 (6 (6 (6 (6	Freq. MHz 0.2380 0.3320 0.3220 0.4260 0.4260 0.8460	Level  dBuV  49.44  34.72  46.27  30.22  40.08  21.99  41.03	Correct Factor dB 10.49 10.23 10.23 10.10 10.10 9.94	Measure- ment dBuV 59.93 45.21 56.50 40.45 50.18 32.09 50.97	Limit  dBuV  62.16  52.16  59.65  49.65  57.33  47.33  56.00	dB -2.23 -6.95 -3.15 -9.20 -7.15 -15.24 -5.03	Detector QP AVG QP AVG QP AVG	
0.150  No. Mk.  1 * (2 )  3 (4 )  5 (6 )  7 (7 )  8 (9 )	Freq. MHz 0.2380 0.2380 0.3220 0.3220 0.4260 0.4260 0.8460 0.8460	Level  dBuV  49.44  34.72  46.27  30.22  40.08  21.99  41.03  24.52	Correct Factor dB 10.49 10.23 10.23 10.10 10.10 9.94 9.94	Measure- ment dBuV 59.93 45.21 56.50 40.45 50.18 32.09 50.97 34.46	Limit  dBuV  62.16  52.16  59.65  49.65  57.33  47.33  56.00  46.00	-2.23 -6.95 -3.15 -9.20 -7.15 -15.24 -5.03 -11.54	Detector QP AVG QP AVG QP AVG QP AVG	
0.150  No. Mk.  1 * (2 )  3 (4 )  5 (6 )  7 (7 )  8 (9 )  10 **	Freq. MHz 0.2380 0.2380 0.3220 0.3220 0.4260 0.4260 0.8460 0.8460 1.4778	Level  dBuV  49.44  34.72  46.27  30.22  40.08  21.99  41.03  24.52  43.38	Correct Factor  dB  10.49  10.49  10.23  10.10  10.10  9.94  9.94  9.89	Measure- ment dBuV 59.93 45.21 56.50 40.45 50.18 32.09 50.97 34.46 53.27	Limit  dBuV  62.16  52.16  59.65  49.65  57.33  47.33  56.00  46.00  46.00	dB -2.23 -6.95 -3.15 -9.20 -7.15 -15.24 -5.03 -11.54 -2.73	Detector QP AVG QP AVG QP AVG QP AVG	



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# 5. Radiated Emission Test

## 5.1 Test Standard and Limit

5.1.1 Test Standard FCC Part 15.209

5.1.2 Test Limit

### Radiated Emission Limits (9kHz~1000MHz)

Frequency (MHz	Field Strength (microvolt/meter)	Measurement Distance (meters)
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

## Radiated Emission Limit (Above 1000MHz)

Frequency	Class A (dBuV	//m)(at 3 M)	Class B (dBuV/m)(at 3 M)		
(MHz)	Peak	Average	Peak	Average	
Above 1000	80	60	74	54	

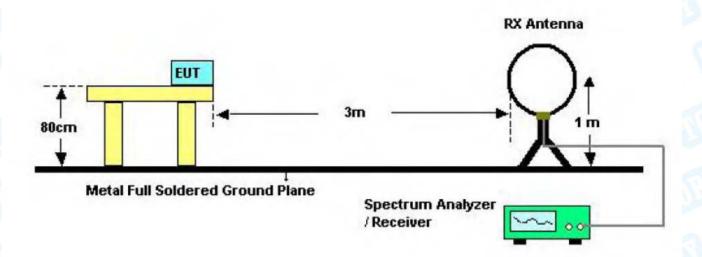
### Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission Level(dBuV/m)=20log Emission Level(uV/m)

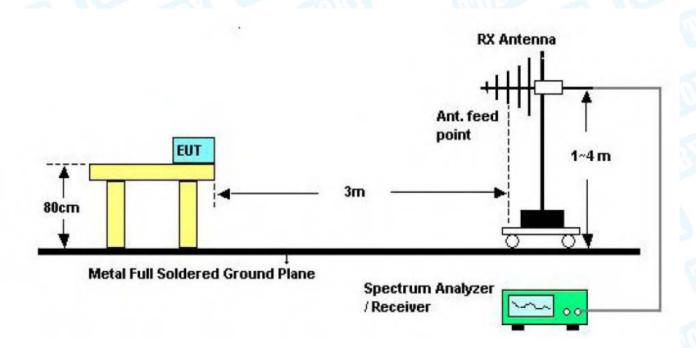


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# 5.2 Test Setup



Below 30MHz Test Setup

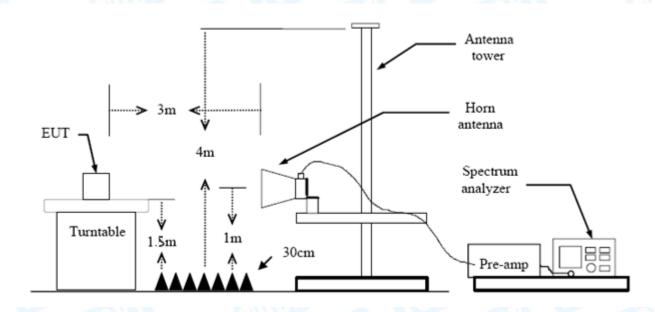


Below 1000MHz Test Setup

TOBY

Report No.: TB-FCC144022

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Above 1GHz Test Setup

### 5.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.



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# 5.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

### 5.5 Test Data

Remark 1: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

Test data please refer the following pages.

Remark 2: 30 MHz~1GHz radiated emissions have been tested both DC 12V and DC 24V, and the worst mode is when the EUT powered by DC 12V power, so for the above 1 GHz radiated emissions only showed the worst mode.



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EUT:	CAR DVR	Mod	lel:	XM-JPL1-1	
Temperature:	25 ℃	Rela	ative Humidity:	55%	
Test Voltage:	DC 12V			THE	
Ant. Pol.	Horizontal	A PAGE		The state of	
Test Mode:	TX B Mode 241	2MHz	CLI I DE		
Remark:	Only worse cas	e is reported		133	
80.0 dBuV/m					
-20			(RF)	FCC 15C 3M Radiation Margin -6	
	50 60 70 80	(MHz)	300 400	500 600 700	1000.000
No. Mk.	Reading Freq. Level	Correct M Factor	/leasure- ment Limi		
	MHz dBuV	dB/m	dBuV/m dBu\	//m dB	Detector
1 37	7.0248 39.61	-18.31	21.30 40.0	00 -18.70	peak
2 ! 65	5.3431 58.89	-24.04	34.85 40.0	00 -5.15	peak
3 ! 13	2.6850 61.78	-22.13	39.65 43.	50 -3.85	peak
4 * 202	2.8103 60.90	-20.27	40.63 43.5	50 -2.87	peak
5 ! 35	1.7078 56.13	-14.60	41.53 46.0	00 -4.47	peak
6 568	8.6127 49.59	-10.13	39.46 46.0	00 -6.54	peak
*:Maximum data	x:Over limit !:over margi	in			



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EUT:		CAR	OVR	M	odel:		XM-JPL1-1	
Tempera	ature:	25 ℃	CIN'	R	elative Humi	dity:	55%	MAN.
est Vol	Itage:	DC 12	2V	150	118	(6)	MISS	
Ant. Pol	l.	Vertica	al	AHUE		9 1	1	
Test Mo	de:	TXBI	Mode 2412	2MHz	CHILD'S	9		Mes
Remark	:	Only v	vorse case	is reported	1		35	
80.0 dBu\	V/m							
30	We the second	2	Mary Mary Mary Mary Mary Mary Mary Mary			(RF)FCC	15C 3M Radiation Margin -6 c	dB
20	40 50	60 70	80	(MHz)	300	400	500 600 700	1000.000
		60 70 req.	Reading Level	(MHz) Correct Factor	300 Measure- ment	400 Limit		1000.000
30.000	Mk. Fr		Reading	Correct	Measure-		Over	1000.000
30.000	Mk. Fr	r <b>eq</b> . Hz	Reading Level	Correct Factor	Measure- ment	Limit	Over m dB	Detecto
No.	Mk. Fr	eq. Hz	Reading Level	Correct Factor	Measure- ment	Limit dBuV/	Over m dB 0 -10.13	Detecto
No.	Mk. Fr M 36.8	eq. Hz 1952 1031	Reading Level dBuV 48.10	Correct Factor dB/m -18.23	Measure- ment dBuV/m 29.87	Limit	Over m dB 0 -10.13 0 -2.52	Detector peak
No.	Mk. Fr M 36.8 * 65.8 ! 135.0	eq. Hz 952 931 0319	Reading Level dBuV 48.10 61.47 59.85	Correct Factor dB/m -18.23 -23.99 -22.08	Measure- ment dBuV/m 29.87 37.48 37.77	Limit  dBuV/  40.00  40.00  43.50	Over m dB 0 -10.13 0 -2.52 0 -5.73	Detector peak peak
No. 1 2 3	Mk. Fr  36.8  * 65.8 ! 135.0 ! 201.3	eq. Hz 952 931 0319 3930	Reading Level dBuV 48.10 61.47 59.85 60.30	Correct Factor dB/m -18.23 -23.99 -22.08 -20.32	Measure- ment dBuV/m 29.87 37.48 37.77 39.98	Limit  dBuV/  40.00  40.00  43.50  43.50	Over m dB 0 -10.13 0 -2.52 0 -5.73 0 -3.52	peak peak peak peak
No. 1 2 3 4 5	Mk. Fr M 36.8 * 65.8 ! 135.0	eq. Hz 952 931 0319 3930	Reading Level dBuV 48.10 61.47 59.85	Correct Factor dB/m -18.23 -23.99 -22.08	Measure- ment dBuV/m 29.87 37.48 37.77	Limit  dBuV/  40.00  40.00  43.50	Over  m dB 0 -10.13 0 -2.52 0 -5.73 0 -3.52 0 -5.33	Detector peak peak



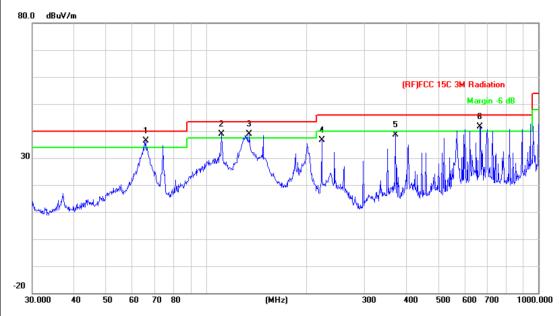
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UT:		CAR	DVR	Me	odel:	XI	M-JPL1-1	
emperatu	re:	<b>25</b> °C		Re	elative Humidit	t <b>y:</b> 55	5%	The second
est Voltag	ge:	DC 2	4V			GUI	130	
nt. Pol.		Horiz	ontal	Bhir.		62		
est Mode	•	TX B	Mode 2412N	ИHz	WILD ST			
Remark:		Only	worse case i	s reported		M'		
80.0 dBuV/m								
30	show of surface	1 X 3	A CONTRACT OF THE PROPERTY OF	Ä		(RF)FCC 1	5C 3M Radiation Margin -6	
20		00 70		a \	200	100 50	200 700	1000 00
30.000 40	50	60 70	80	(MHz)	300	400 50	00 600 700	1000.00
No. Mk	c. Fr	eq.	Reading Level	Correct Factor	Measure- ment L	imit	Over	
	M	Hz	dBuV	dB/m	dBuV/m (	dBuV/m	dB	Detecto
1 !	65.3	431	60.89	-24.04	36.85	40.00	-3.15	peak
2 !	74.1	350	58.73	-23.48	35.25	40.00	-4.75	peak
3 *	132.6	850	62.78	-22.13	40.65	43.50	-2.85	peak
			60.40	-20.27		43.50	-3.37	peak
4 !	202.8	5103						
				-18.43	40.75	46.00	-5.25	реак
	202.8 243.3 406.0	3771	59.18 53.86	-18.43 -12.83		46.00 46.00	-5.25 -4.97	peak peak



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EUT:	CAR DVR	Model:	XM-JPL1-1				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	est Voltage: DC 24V						
Ant. Pol.	Vertical						
Test Mode:	TX B Mode 2412MHz		THE PARTY OF THE P				
Remark:	Only worse case is repor	ted	1:35				
80.0 dBuV/m							



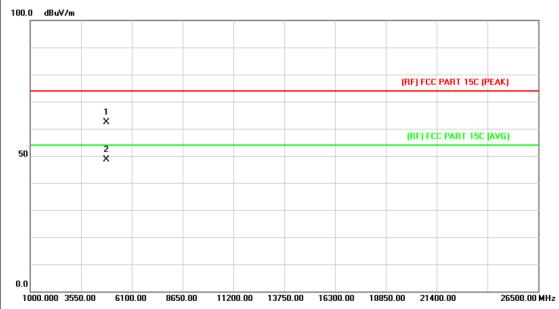
No	. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	65.8031	60.47	-23.99	36.48	40.00	-3.52	peak
2	İ	111.3468	60.76	-21.95	38.81	43.50	-4.69	peak
3	ļ	135.0319	60.85	-22.08	38.77	43.50	-4.73	peak
4		222.9499	56.09	-19.40	36.69	46.00	-9.31	peak
5		372.0045	53.15	-14.48	38.67	46.00	-7.33	peak
6	ļ	668.1422	49.44	-7.87	41.57	46.00	-4.43	peak

<sup>\*:</sup>Maximum data x:Over limit !:over margin



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EUT:	CAR DVR	Model:	XM-JPL1-1			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 12V	DC 12V				
Ant. Pol.	Horizontal					
Test Mode:	TX B Mode 2412MHz					
Remark:	No report for the emission which more than 10 dB below the					
	prescribed limit.					

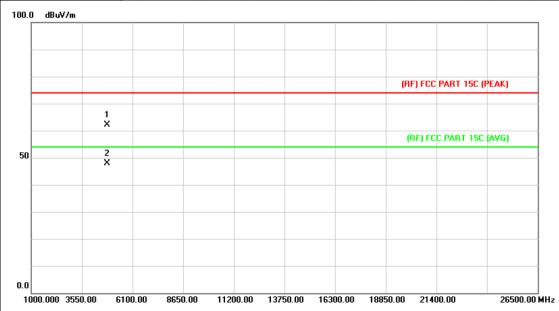


No	. Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4823.955	48.92	13.56	62.48	74.00	-11.52	peak
2	*	4823.994	35.06	13.56	48.62	54.00	-5.38	AVG



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EUT:	CAR DVR	Model:	XM-JPL1-1			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 12V	DC 12V				
Ant. Pol.	Vertical	Vertical				
Test Mode:	TX B Mode 2412MHz					
Remark:	No report for the emission which more than 10 dB below the prescribed limit.					
prescribed inflit.						

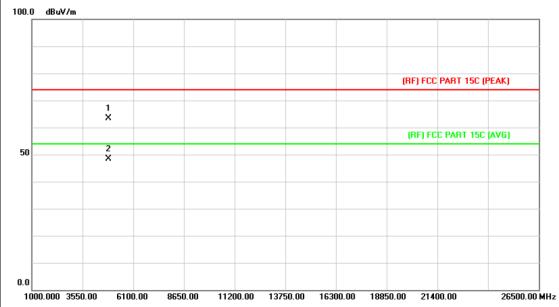


No.	Mk.	Freq.	_	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4823.982	48.56	13.56	62.12	74.00	-11.88	peak
2	*	4824.009	34.42	13.56	47.98	54.00	-6.02	AVG



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EUT:	CAR DVR	Model:	XM-JPL1-1				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	DC 12V	DC 12V					
Ant. Pol.	Horizontal						
Test Mode:	TX B Mode 2437MHz		THE PARTY OF THE P				
Remark:	No report for the emission which more than 10 dB below the						
	prescribed limit.						

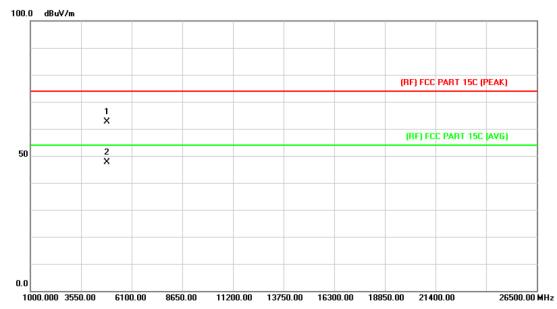


No	o. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4873.912	49.55	13.86	63.41	74.00	-10.59	peak
2	*	4873.956	34.45	13.86	48.31	54.00	-5.69	AVG



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EUT:	CAR DVR	Model:	XM-JPL1-1				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	DC 12V	DC 12V					
Ant. Pol.	Vertical	Vertical					
Test Mode:	TX B Mode 2437MHz		THE PARTY OF THE P				
Remark:	No report for the emission which more than 10 dB below the						
	prescribed limit.						

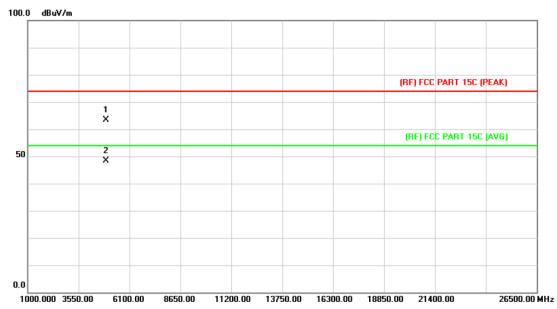


No	. Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4873.830	48.71	13.86	62.57	74.00	-11.43	peak
2	*	4873.830	33.79	13.86	47.65	54.00	-6.35	AVG



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EUT:	CAR DVR	Model:	XM-JPL1-1				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	DC 12V	DC 12V					
Ant. Pol.	Horizontal	Horizontal					
Test Mode:	TX B Mode 2462MHz		THE PARTY OF THE P				
Remark:	No report for the emission which more than 10 dB below the						
	prescribed limit.						

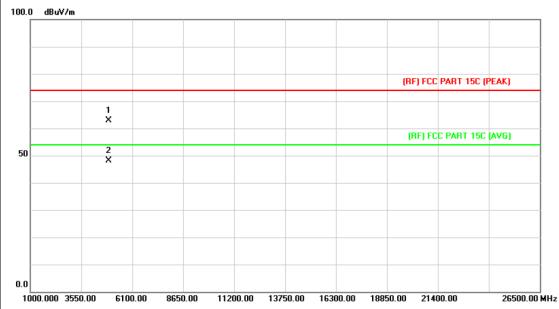


No	o. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4924.037	49.29	14.15	63.44	74.00	-10.56	peak
2	*	4924.063	34.20	14.15	48.35	54.00	-5.65	AVG



Page: 30 of 76

EUT:	CAR DVR	Model:	XM-JPL1-1					
Temperature:	25 ℃	Relative Humidity:	55%					
Test Voltage:	DC 12V	DC 12V						
Ant. Pol.	Vertical	Vertical						
Test Mode:	TX B Mode 2462MHz		THE PARTY OF THE P					
Remark:	No report for the emission which more than 10 dB below the							
	prescribed limit.							

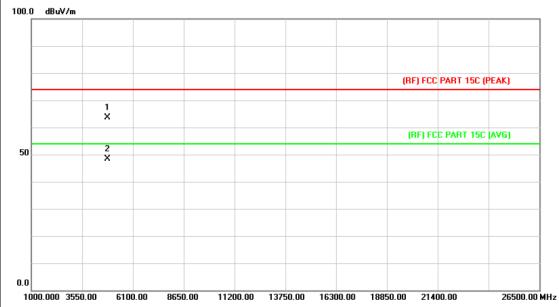


N	o.	Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
			MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1			4923.981	48.72	14.15	62.87	74.00	-11.13	peak
2		*	4924.081	33.96	14.15	48.11	54.00	-5.89	AVG



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EUT:	CAR DVR	Model:	XM-JPL1-1			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 12V	DC 12V				
Ant. Pol.	Horizontal	Horizontal				
Test Mode:	TX G Mode 2412MHz		The same			
Remark:	No report for the emission which more than 10 dB below the prescribed limit.					
400.0 ID.UU						

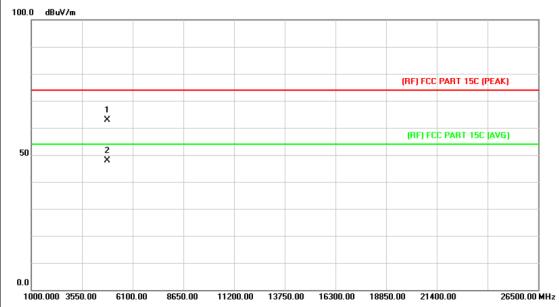


No	. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4823.921	50.08	13.56	63.64	74.00	-10.36	peak
2	*	4823.963	34.78	13.56	48.34	54.00	-5.66	AVG



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EUT:	CAR DVR	Model:	XM-JPL1-1			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 12V	DC 12V				
Ant. Pol.	Vertical	Vertical				
Test Mode:	TX G Mode 2412MHz		A THURSDAY			
Remark:	No report for the emission	No report for the emission which more than 10 dB below the				
	prescribed limit.					
i						



No	o. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4823.887	49.21	13.56	62.77	74.00	-11.23	peak
2	*	4823.895	34.22	13.56	47.78	54.00	-6.22	AVG



Page: 33 of 76

EUT:	CAR DVR	Model:	XM-JPL1-1			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 12V	DC 12V				
Ant. Pol.	Horizontal	Horizontal				
Test Mode:	TX G Mode 2437MHz					
Remark:	No report for the emission which more than 10 dB below the prescribed limit.					

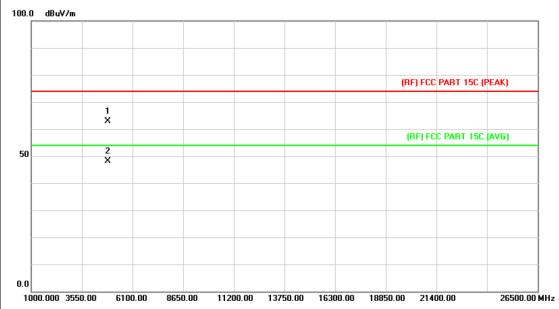


No	. Mk.	Freq.	_	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4873.857	49.39	13.86	63.25	74.00	-10.75	peak
2	*	4873.903	34.57	13.86	48.43	54.00	-5.57	AVG



Page: 34 of 76

EUT:	CAR DVR	Model:	XM-JPL1-1			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 12V	DC 12V				
Ant. Pol.	Vertical	Vertical				
Test Mode:	TX G Mode 2437MHz					
Remark:	No report for the emission which more than 10 dB below the					
	prescribed limit.					

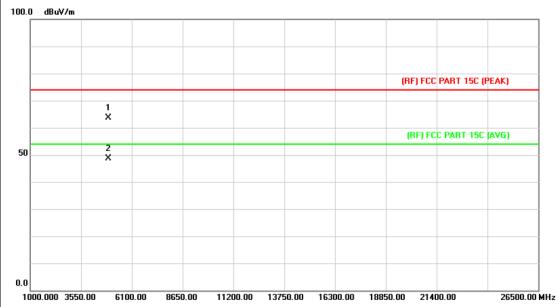


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4874.031	49.02	13.86	62.88	74.00	-11.12	peak
2	*	4874.083	34.15	13.86	48.01	54.00	-5.99	AVG



Page: 35 of 76

EUT:	CAR DVR	Model:	XM-JPL1-1			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 12V	DC 12V				
Ant. Pol.	Horizontal	Horizontal				
Test Mode:	TX G Mode 2462MHz					
Remark:	No report for the emission which more than 10 dB below the					
	prescribed limit.	2 13				



No.	Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4924.076	49.40	14.15	63.55	74.00	-10.45	peak
2	*	4924.148	34.52	14.15	48.67	54.00	-5.33	AVG



Page: 36 of 76

EUT:	CAR DVR	Model:	XM-JPL1-1		
Temperature:	25 ℃	Relative Humidity:	55%		
Test Voltage:	DC 12V				
Ant. Pol.	Vertical				
Test Mode:	TX G Mode 2462MHz		A LIVE		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.				

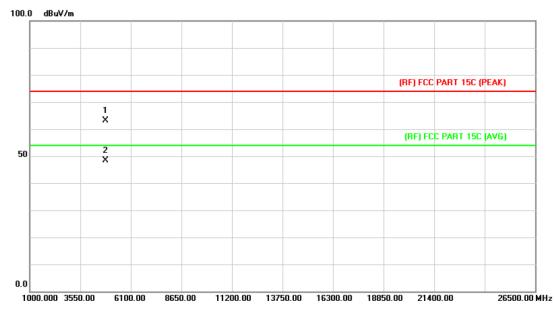


١	No.	Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
			MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1			4923.858	48.74	14.15	62.89	74.00	-11.11	peak
2		*	4923.924	33.96	14.15	48.11	54.00	-5.89	AVG



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EUT:	CAR DVR	Model:	XM-JPL1-1			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 12V	01 - 6				
Ant. Pol.	Horizontal	Horizontal				
Test Mode:	TX N(HT20) Mode 2412	ИНz				
Remark:	No report for the emission which more than 10 dB below the					
	prescribed limit.					

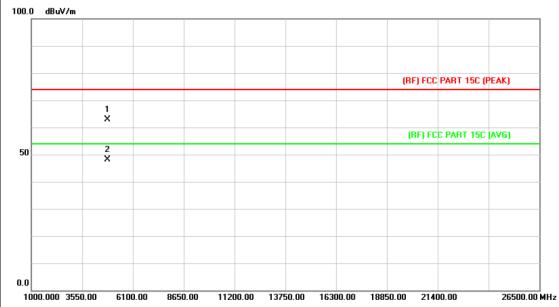


١	No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
			MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1			4823.918	49.63	13.56	63.19	74.00	-10.81	peak
2		*	4824.008	34.75	13.56	48.31	54.00	-5.69	AVG



Page: 38 of 76

EUT:	CAR DVR	Model:	XM-JPL1-1			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 12V	01 - 6				
Ant. Pol.	Vertical	Vertical				
Test Mode:	TX N(HT20) Mode 2412	ИНz				
Remark:	No report for the emission which more than 10 dB below the					
	prescribed limit.					
400 B.W.						

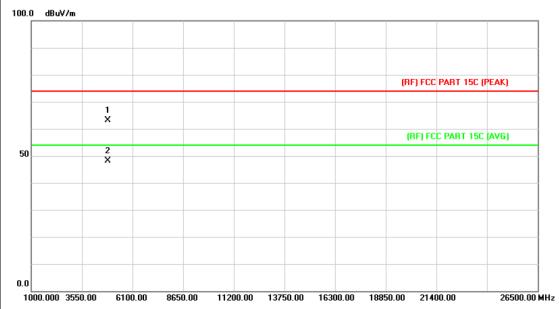


No	. Mk	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4824.104	49.40	13.56	62.96	74.00	-11.04	peak
2	*	4824.162	34.49	13.56	48.05	54.00	-5.95	AVG



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EUT:	CAR DVR	Model:	XM-JPL1-1				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	DC 12V	DC 12V					
Ant. Pol.	Horizontal	Horizontal					
Test Mode:	TX N(HT20) Mode 2437	MHz	The state of the s				
Remark:	No report for the emissio	No report for the emission which more than 10 dB below the					
	prescribed limit.						

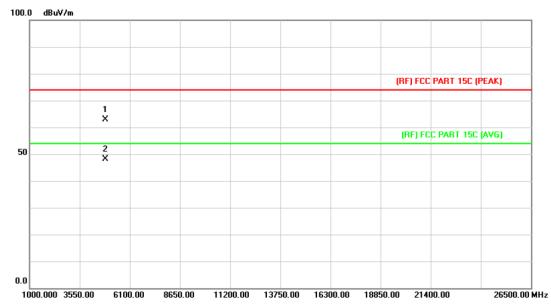


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4874.025	49.29	13.86	63.15	74.00	-10.85	peak
2	*	4874.123	34.38	13.86	48.24	54.00	-5.76	AVG



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EUT:	CAR DVR	Model:	XM-JPL1-1			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 12V	DC 12V				
Ant. Pol.	Vertical	Vertical				
Test Mode:	TX N(HT20) Mode 2437N	ИНz				
Remark:	No report for the emission which more than 10 dB below the					
	prescribed limit.					

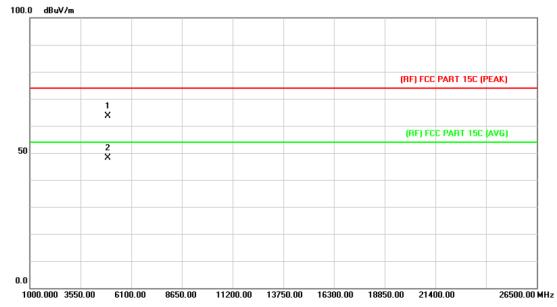


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4873.873	48.99	13.86	62.85	74.00	-11.15	peak
2	*	4873.885	34.29	13.86	48.15	54.00	-5.85	AVG



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EUT:	CAR DVR	Model:	XM-JPL1-1			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 12V	DC 12V				
Ant. Pol.	Horizontal	Horizontal				
Test Mode:	TX N(HT20) Mode 2462	MHz				
Remark:	No report for the emission	No report for the emission which more than 10 dB below the				
	prescribed limit.					

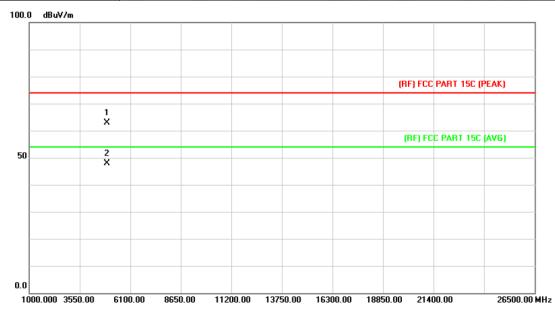


No	. Mk	. Freq.	_	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4924.180	49.36	14.15	63.51	74.00	-10.49	peak
2	*	4924.196	33.88	14.15	48.03	54.00	-5.97	AVG



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EUT:	CAR DVR	Model:	XM-JPL1-1		
Temperature:	25 ℃	Relative Humidity:	55%		
Test Voltage:	DC 12V	01 - 6			
Ant. Pol.	Vertical				
Test Mode:	TX N(HT20) Mode 2462N	ИНz			
Remark:	No report for the emission which more than 10 dB below the				
prescribed limit.					



No.	Mk.	Freq.	_	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4924.090	48.66	14.15	62.81	74.00	-11.19	peak
2	*	4924.098	33.76	14.15	47.91	54.00	-6.09	AVG



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# 6. Restricted Bands Requirement

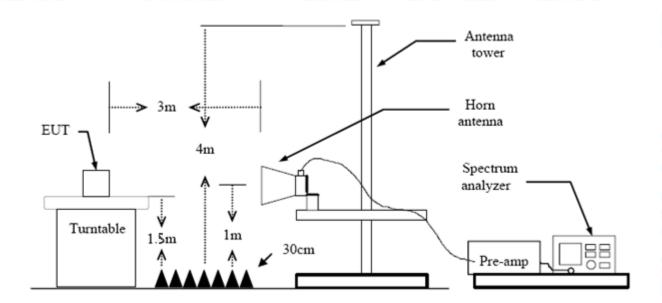
#### 6.1 Test Standard and Limit

6.1.1 Test Standard FCC Part 15.209 FCC Part 15.205

6.1.2 Test Limit

Restricted Frequency	Class B (dB	BuV/m)(at 3 M)	
Band (MHz)	Peak	Average	
2310 ~2390	74	54	
2483.5 ~2500	74	54	

# 6.2 Test Setup



### 6.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.



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(4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.

### 6.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

### 6.5 Test Data

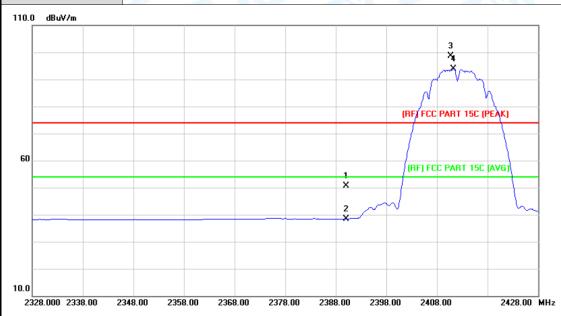
Remark: Only showed the data of worst mode when the EUT is powered by DC 12V. Please see the next page.



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# (1) Radiation Test

EUT:	CAR DVR	Model:	XM-JPL1-1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 12V	U.	
Ant. Pol.	Horizontal	COLUMN TO SERVICE SERV	THE PARTY OF
Test Mode:	TX B Mode 2412MHz		
Remark:	N/A	J 13	

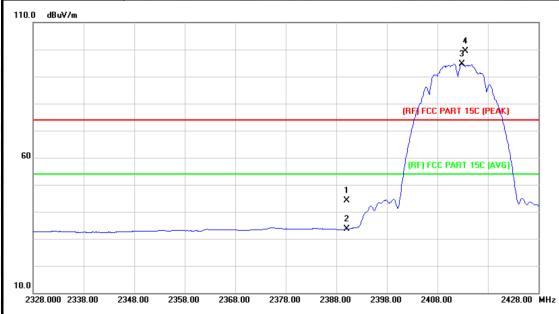


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	49.91	0.77	50.68	Fundamenta	al Frequency	peak
2		2390.000	37.70	0.77	38.47	Fundamenta	al Frequency	AVG
3	Χ	2410.700	97.84	0.86	98.70	74.00	24.70	peak
4	*	2411.300	92.98	0.86	93.84	54.00	39.84	AVG



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i	EUT:	CAR DVR	Model:	XM-JPL1-1			
	Temperature:	25 ℃	Relative Humidity:	55%			
	Test Voltage:	DC 12V	01 - 6	THE STATE OF			
Ì	Ant. Pol.	Vertical					
d	Test Mode:	TX B Mode 2412MHz					
	Remark:	N/A	The same				
110.0 dBuV/m							
				<b>_</b>			

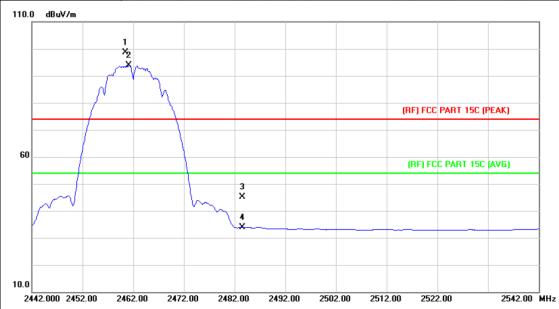


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	43.47	0.77	44.24	74.00	-29.76	peak
2		2390.000	32.83	0.77	33.60	54.00	-20.40	AVG
3	*	2412.800	93.78	0.86	94.64	Fundamental Frequency		AVG
4	Χ	2413.500	98.64	0.86	99.50	Fundamenta	al Frequency	peak



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EUT:	CAR DVR	Model:	XM-JPL1-1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 12V		THE STATE OF THE S
Ant. Pol.	Horizontal	U.	
Test Mode:	TX B Mode 2462MHz		The same
Remark:	N/A		1:33

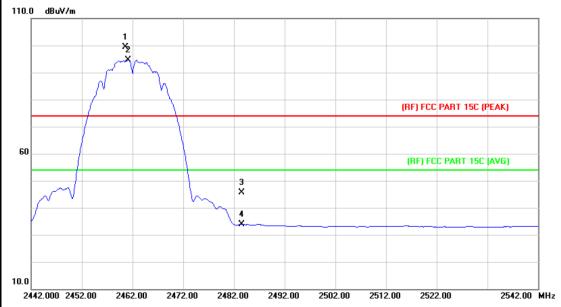


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	Χ	2460.500	97.56	1.06	98.62	Fundamental Frequency		peak
2	*	2461.200	92.79	1.07	93.86	Fundamental Frequency		AVG
3		2483.500	43.84	1.17	45.01	74.00	-28.99	peak
4		2483.500	32.76	1.17	33.93	54.00	-20.07	AVG



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EUT:	CAR DVR	Model:	XM-JPL1-1
Temperature:	<b>25</b> ℃	Relative Humidity:	55%
Test Voltage:	DC 12V		THE STATE OF
Ant. Pol.	Vertical	U.	
Test Mode:	TX B Mode 2462MHz		THE PARTY OF THE P
Remark:	N/A		



No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	Χ	2460.600	98.20	1.06	99.26	Fundamental Frequency		peak
2	*	2461.200	93.66	1.07	94.73	Fundamental Frequency		AVG
3		2483.500	44.37	1.17	45.54	74.00	-28.46	peak
4		2483.500	32.70	1.17	33.87	54.00	-20.13	AVG



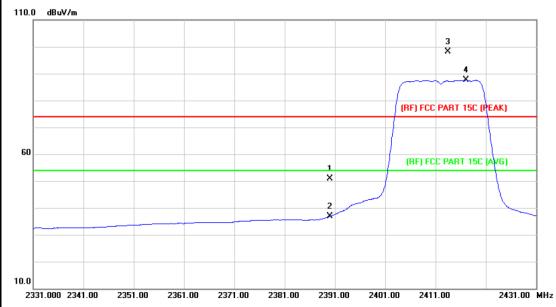
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	•		CAR	RDVR		2	Model			XM-JPL1-1		10
Гет	peratur	e:	25 °	С		13	Relative Humidity: 55%			55%		
Test	t Voltage	e:	DC 1	12V			D'ATT		G	TIME		A
4nt.	Pol.		Horiz	zontal		B.A.	1		16			
Test	Mode:		TX C	3 Mode	2412	MHz	_ 6	11/10		JA W	Me	
Ren	nark:		N/A	18			200 /		cill)	35		
110.0	) dBuV/m											_
									3 X (RF) FCC	A X	()	
60							1 ×	سر	(RF) FC	C PART 15C (AVE	i)	
10.0												
23	331.000 234	1.00 23	351.00	2361.00 Read	2371. lina	.00 2381		1.00 240 asure-	1.00 2411		2431.00	мн
		_							1 ::1			
N	lo. Mk.		•	Lev	el	Facto		ent	Limit	Over		
N	lo. Mk.	Fre MH	•		el	Factor dB/m		ient BuV/m	Limit dBuV/m		Dete	cto
N 1			z	Lev	el V		dE			n dB	Dete	
		МН	z 000	<b>Lev</b> dBu	el ∨ 05	dB/m	dE	BuV/m	dBuV/m	dB -23.18		ak
1		MH 2390.	z 000 000	dBu	el V 05 76	dB/m	5 3	0.82 6.53	74.00 54.00	dB -23.18	pe A\	ak



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EUT:	CAR DVR	Model:	XM-JPL1-1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 12V	01 - 6	THE STATE OF THE S
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2412MHz		
Remark:	N/A		1:33

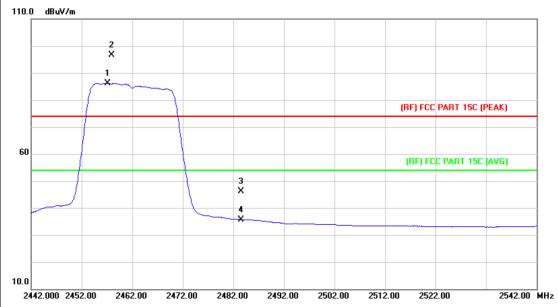


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	50.10	0.77	50.87	74.00	-23.13	peak
2		2390.000	36.14	0.77	36.91	54.00	-17.09	AVG
3	Χ	2413.500	97.30	0.86	98.16	Fundamental Frequency		peak
4	*	2417.100	86.64	0.88	87.52	Fundamental	Frequency	AVG



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EUT:	CAR DVR	Model:	XM-JPL1-1
Temperature:	<b>25</b> ℃	Relative Humidity:	55%
Test Voltage:	DC 12V	131 - 6	Miles Comment
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2462MHz		THE PARTY OF THE P
Remark:	N/A		1:33

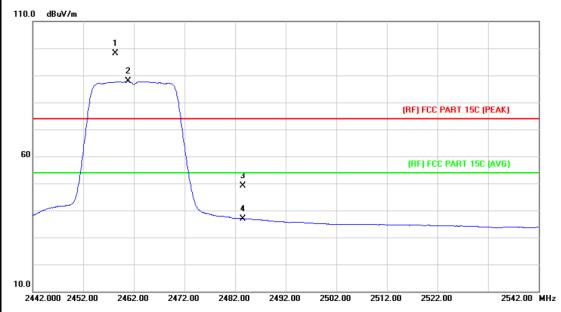


No	o. Mk	c. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2457.100	85.11	1.05	86.16	Fundamental	I Frequency	AVG
2	Х	2457.900	95.56	1.06	96.62	Fundamental	I Frequency	peak
3		2483.500	44.89	1.17	46.06	74.00	-27.94	peak
4		2483.500	34.47	1.17	35.64	54.00	-18.36	AVG



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4	EUT:	CAR DVR	Model:	XM-JPL1-1
	Temperature:	25 ℃	Relative Humidity:	55%
	Test Voltage:	DC 12V	(1) T	THE STATE OF THE S
	Ant. Pol.	Vertical		
4	Test Mode:	TX G Mode 2462MHz		
	Remark:	N/A		

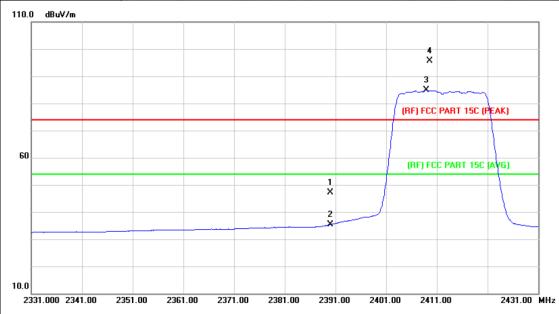


N	o. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	Х	2458.300	97.00	1.06	98.06	Fundamental	Frequency	peak
2	*	2460.800	86.71	1.06	87.77	Fundamental	Frequency	AVG
3		2483.500	47.92	1.17	49.09	74.00	-24.91	peak
4		2483.500	35.73	1.17	36.90	54.00	-17.10	AVG



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EUT:	CAR DVR	Model:	XM-JPL1-1			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 12V					
Ant. Pol.	Horizontal					
Test Mode:	TX N(HT20) Mode 2412	TX N(HT20) Mode 2412MHz				
Remark:	N/A		1:13			



No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	46.40	0.77	47.17	74.00	-26.83	peak
2		2390.000	34.64	0.77	35.41	54.00	-18.59	AVG
3	*	2408.900	84.05	0.85	84.90	Fundamental Frequency		AVG
4	Χ	2409.600	94.81	0.85	95.66	Fundamenta	l Frequency	peak



10.0

2331.000 2341.00

2351.00

Report No.: TB-FCC144022

2431.00 MHz

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EU	Γ:	CAR D	CAR DVR Model			XM-JPL1-1		
Ten	nperature:	25 ℃	CITIE	Relative Humi	dity:	lity: 55%		
Tes	t Voltage:	DC 12	V					
Ant	. Pol.	Vertica	ı					
Tes	t Mode:	TX N(H	HT20) Mode 2	2412MHz		THE PARTY OF THE P		
Rer	nark:	N/A	N/A					
110.0	) dBuV/m							
						3 X		
						4 X		
					(RF) F	CC PART 15C (PEAK)		
60								
				1 X	(RF)	FCC PART 15C (AVG)		
				×	f			

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	49.16	0.77	49.93	74.00	-24.07	peak
2		2390.000	35.04	0.77	35.81	54.00	-18.19	AVG
3	Χ	2415.300	95.70	0.88	96.58	Fundamental Frequency		peak
4	*	2417.300	84.83	0.89	85.72	Fundamental Frequency		AVG

2381.00

2391.00

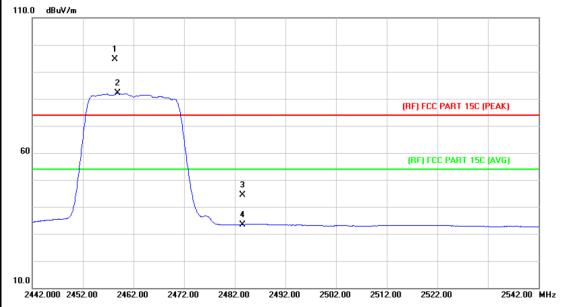
2401.00

2371.00



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EUT:	CAR DVR	CAR DVR Model:				
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:						
Ant. Pol. Horizontal						
Test Mode:	TX N(HT20) Mode 2462I	MHz				
Remark:	N/A		1:33			
110.0 dBuV/m						

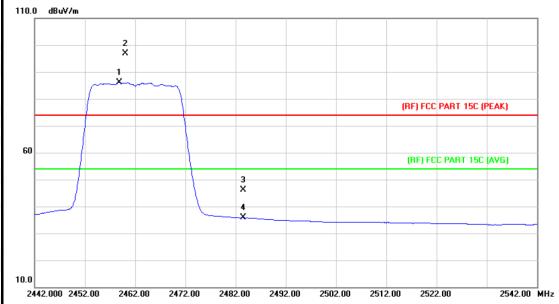


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	Χ	2458.300	93.62	1.06	94.68	Fundamental	Frequency	peak
2	*	2458.900	81.00	1.06	82.06	Fundamental	Frequency	AVG
3		2483.500	43.25	1.17	44.42	74.00	-29.58	peak
4		2483.500	32.27	1.17	33.44	54.00	-20.56	AVG



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EUT:	CAR DVR	Model:	XM-JPL1-1			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 12V					
Ant. Pol.	Vertical					
Test Mode:	TX N(HT20) Mode 2462	TX N(HT20) Mode 2462MHz				
Remark:	N/A		1:13			



No.	Mk.	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2458.900	85.03	1.06	86.09	Fundamental Frequency		AVG
2	Χ	2460.000	95.82	1.06	96.88	Fundamental Frequency		peak
3		2483.500	44.87	1.17	46.04	74.00	-27.96	peak
4		2483.500	34.59	1.17	35.76	54.00	-18.24	AVG

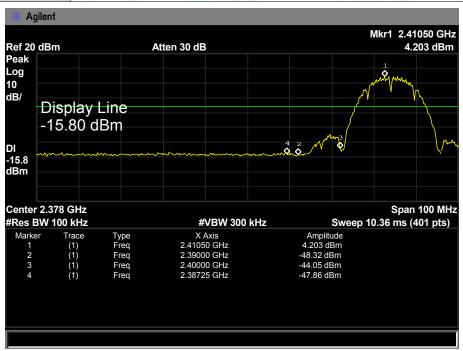


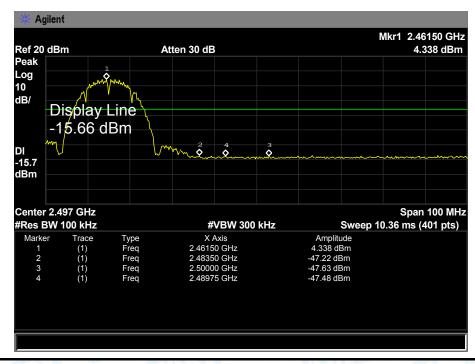


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### (2) Conducted Test

EUT:	CAR DVR	Model:	XM-JPL1-1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 12V		
Test Mode:	TX B Mode 2412MHz / TX B Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		



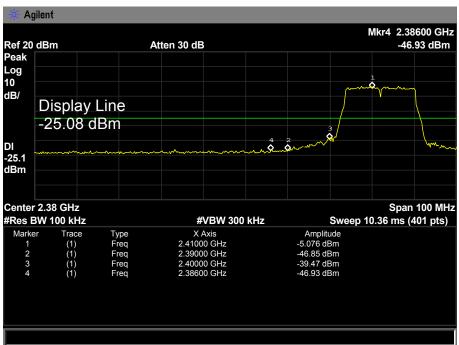


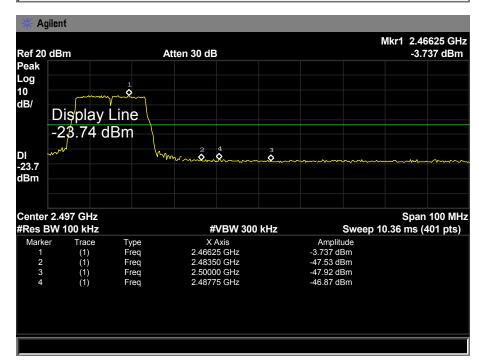




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EUT:	CAR DVR	Model:	XM-JPL1-1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 12V		
Test Mode:	TX G Mode 2412MHz / TX G Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		



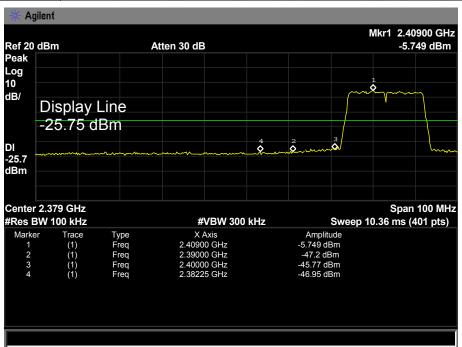


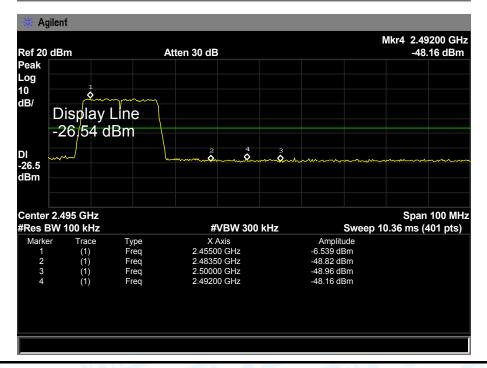




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EUT:	CAR DVR	Model:	XM-JPL1-1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 12V		
Test Mode:	TX N(HT20) Mode 2412MHz / TX N(HT20) Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		







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# 7. Bandwidth Test

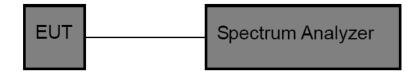
### 7.1 Test Standard and Limit

7.1.1 Test Standard FCC Part 15.247 (a)(2)

7.1.2 Test Limit

FCC	FCC Part 15 Subpart C(15.247)/RSS-210				
Test Item	Test Item Limit Frequency Range(MHz)				
Bandwidth	>=500 KHz (6dB bandwidth)	2400~2483.5			

### 7.2 Test Setup



### 7.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) The bandwidth is measured at an amplitude level reduced 6dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst –case (i.e the widest) bandwidth.
- (3)Measure the channel separation the spectrum analyzer was set to Resolution Bandwidth:100 kHz, and Video Bandwidth:300 kHz, Detector: Peak, Sweep Time set auto.

### 7.4 EUT Operating Condition

The EUT was set to continuously transmitting in each mode and low, middle and high channel for the test.



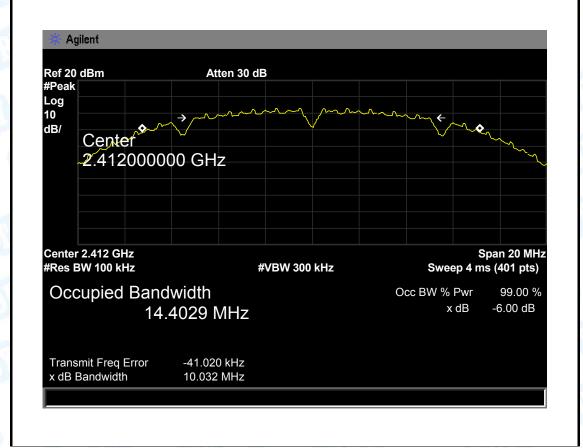
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### 7.5 Test Data

EUT:	CAR DVR	Model:	XM-JPL1-1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 12V		
Test Mode:	TX 802.11B Mode		
Channel frequency 6dB Bandwidth		99% Bandwidth	Limit
(MHz)	(MHz)	(MHz)	(MHz)
2412	10.032	14.4029	
2437	10.025	14.3790	>=0.5
2462	10.019	14.3285	

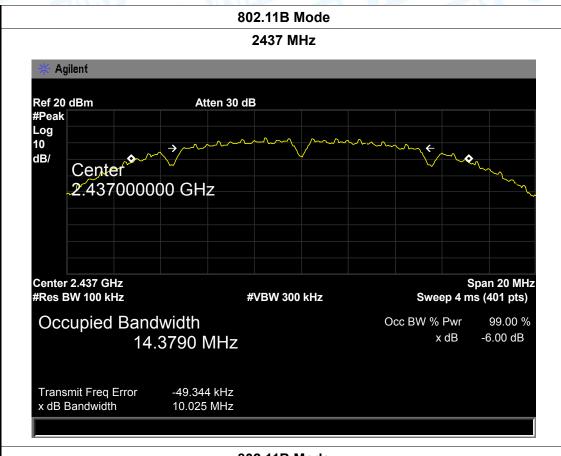
#### 802.11B Mode

### 2412 MHz





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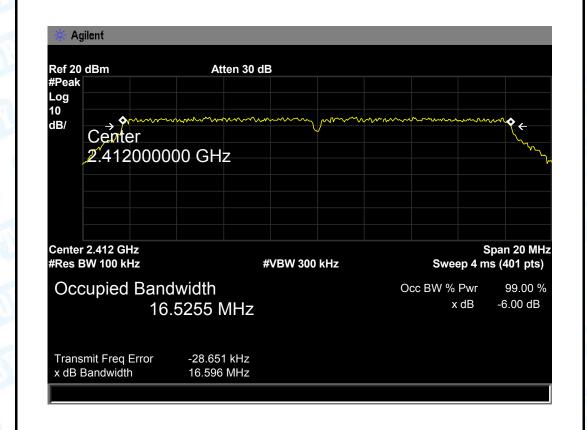
### 802.11B Mode 2462 MHz Agilent Ref 20 dBm Atten 30 dB #Peak Log 10 dB/ Center 2.462000000 GHz Center 2.462 GHz Span 20 MHz #Res BW 100 kHz **#VBW 300 kHz** Sweep 4 ms (401 pts) Occupied Bandwidth Occ BW % Pwr 99.00 % -6.00 dB x dB 14.3285 MHz Transmit Freq Error -44.923 kHz x dB Bandwidth 10.019 MHz



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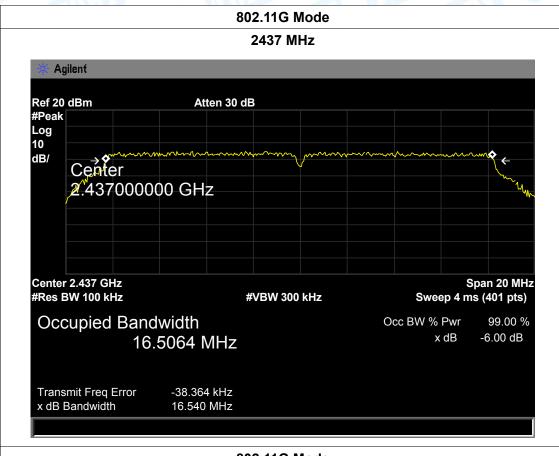
EUT:	CAR DVR	Model:	XM-JPL1-1	
Temperature:	25 ℃	Relative Humidity:	55%	
Test Voltage:	DC 12V			
Test Mode:	TX 802.11G Mode			
Channel frequency 6dB Bandwidth		99% Bandwidth	Limit	
(MHz)	(MHz)	(MHz)	(MHz)	
2412	16.596	16.5255		
2437	16.540	16.5064	>=0.5	
2462 16.592		16.5201		
802.11G Mode				

#### 2412 MHz





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### 802.11G Mode 2462 MHz Agilent Ref 20 dBm Atten 30 dB #Peak Log 10 dB/ Center **2**.462000000 GHz Center 2.462 GHz Span 20 MHz #Res BW 100 kHz **#VBW 300 kHz** Sweep 4 ms (401 pts) Occupied Bandwidth Occ BW % Pwr 99.00 % -6.00 dB x dB 16.5201 MHz Transmit Freq Error -35.205 kHz x dB Bandwidth 16.592 MHz

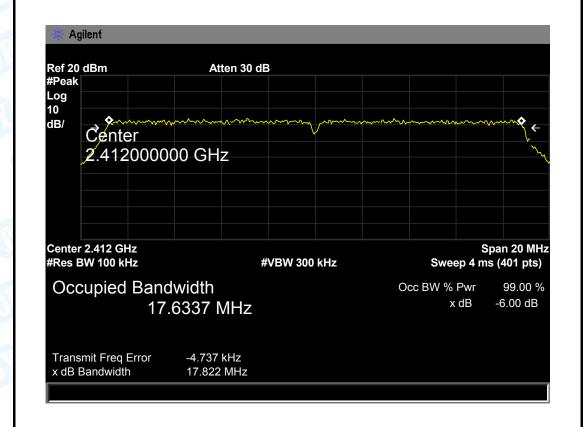


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EUT:	CAR DVR	Model:	XM-JPL1-1	
Temperature:	25 ℃	Relative Humidity:	55%	
Test Voltage:	DC 12V			
Test Mode:	TX 802.11N(HT20) Mode			
Channel frequence	cy 6dB Bandwidth	99% Bandwidth	Limit	
(MHz)	(MHz)	(MHz)	(MHz)	
2412	17.822	17.6337		
2437 17.823		17.6200	>=0.5	
2462 17.835		17.6287		
802.11N(HT20) Mode				

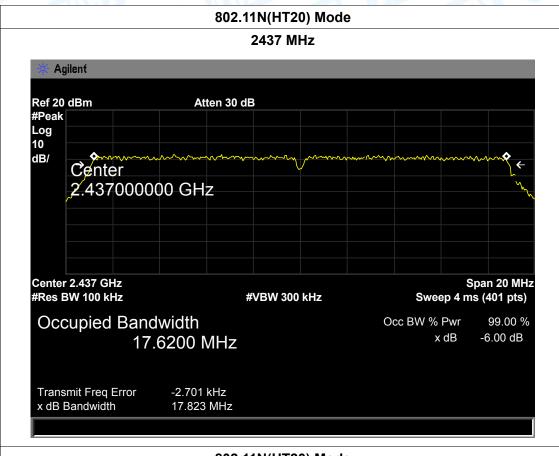
#### 2.1114(11120) 1410

#### 2412 MHz





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### 802.11N(HT20) Mode 2462 MHz Agilent Ref 20 dBm Atten 30 dB #Peak Log 10 dB/ Center 2.462000000 GHz Center 2.462 GHz Span 20 MHz #Res BW 100 kHz **#VBW 300 kHz** Sweep 4 ms (401 pts) Occupied Bandwidth Occ BW % Pwr 99.00 % -6.00 dB x dB 17.6287 MHz Transmit Freq Error -16.243 kHz x dB Bandwidth 17.835 MHz



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# 8. Peak Output Power Test

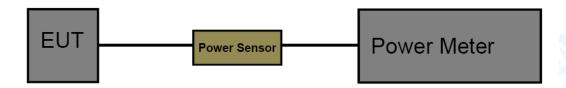
### 8.1 Test Standard and Limit

8.1.1 Test Standard FCC Part 15.247 (b)

8.1.2 Test Limit

FCC Part 15 Subpart C(15.247)/RSS-210				
Test Item Limit Frequency Range(MHz)				
Peak Output Power	1 Watt or 30 dBm	2400~2483.5		

# 8.2 Test Setup



### 8.3 Test Procedure

The measurement is according to section 9.1.2 of KDB 558074 D01 DTS Meas Guidance v03r02.

The EUT was connected to RF power meter via a broadband power sensor as show the block above. The power sensor video bandwidth is greater than or equal to the DTS bandwidth of the equipment.

# 8.4 EUT Operating Condition

The EUT was set to continuously transmitting in the max power during the test.



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# 8.5 Test Data

EUT:	CAR DVR	Model Name :	XM-JPL1-1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 12V		an D
Mode	Channel frequency (MHz)	Test Result (dBm)	Limit (dBm)
	2412	15.06	
802.11b	2437	15.16	
	2462	15.30	
	2412	13.41	
802.11g	2437	12.83	30
	2462	13.36	
802.11n (HT20)	2412	12.16	
	2437	11.77	
	2462	12.08	
	Resi	ult: PASS	



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# 9. Power Spectral Density Test

### 9.1 Test Standard and Limit

9.1.1 Test Standard FCC Part 15.247 (e)

9.1.2 Test Limit

FCC Part 15 Subpart C(15.247)				
Test Item Limit Frequency Range(MHz)				
Power Spectral Density	8dBm(in any 3 kHz)	2400~2483.5		

### 9.2 Test Setup



### 9.3 Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v03r02.

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Set analyser center frequency to DTS channel center frequency.
- (3) Set the span to 1.5 times the DTS bandwidth.
- (4) Set the RBW to: 3 kHz(5) Set the VBW to: 10 kHz
- (6) Detector: peak(7) Sweep time: auto
- (8) Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

# 9.4 EUT Operating Condition

The EUT was set to continuously transmitting in each mode and low, middle and high channel for the test.

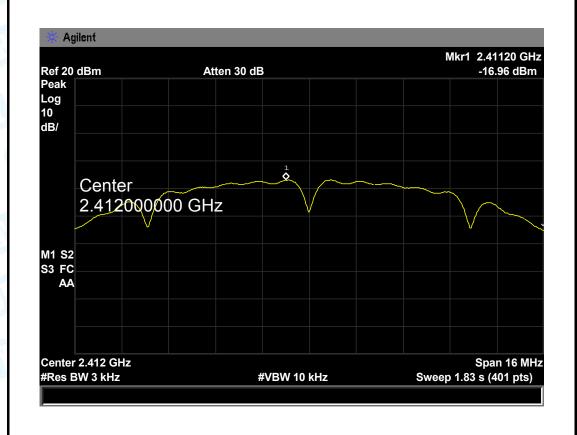


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### 9.5 Test Data

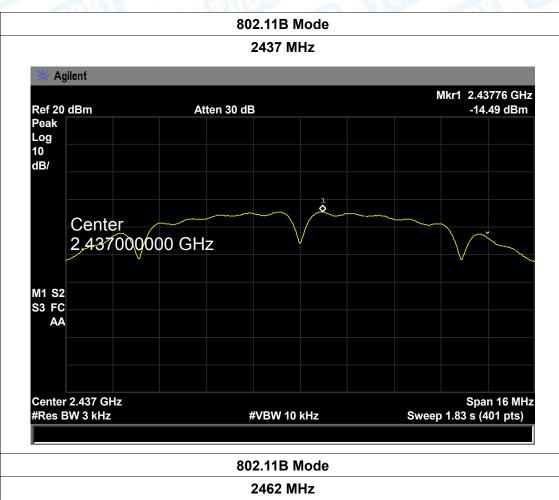
EUT:	CAR DVR		Model:	XM-JPL1-1
Temperature:	<b>25</b> ℃		Relative Humidity:	55%
Test Voltage:	DC 12V	DC 12V		
Test Mode:	TX 802.1	TX 802.11B Mode		
Channel Freq	uency	Power Density		Limit (dBm)
(MHz)		(3 kHz/dBm)		
2412		-16	.96	
2437	2437		.49	8
2462		-14	.21	
802.11B Mode				

### 2412 MHz





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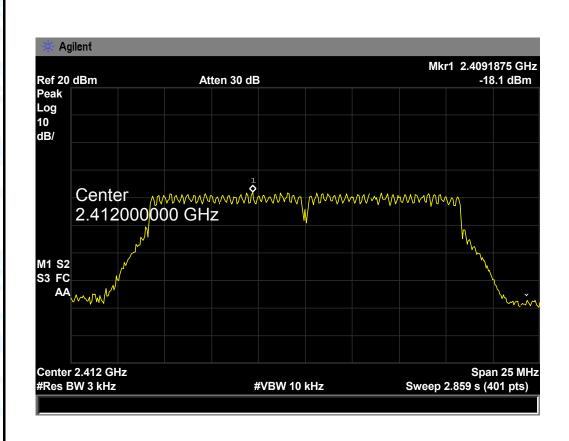
Agilent Mkr1 2.46276 GHz -14.21 dBm Ref 20 dBm Atten 30 dB Peak Log 10 dB/ Center 2,462000000 GHz M1 S2 S3 FC AA Center 2.462 GHz Span 16 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 1.83 s (401 pts)



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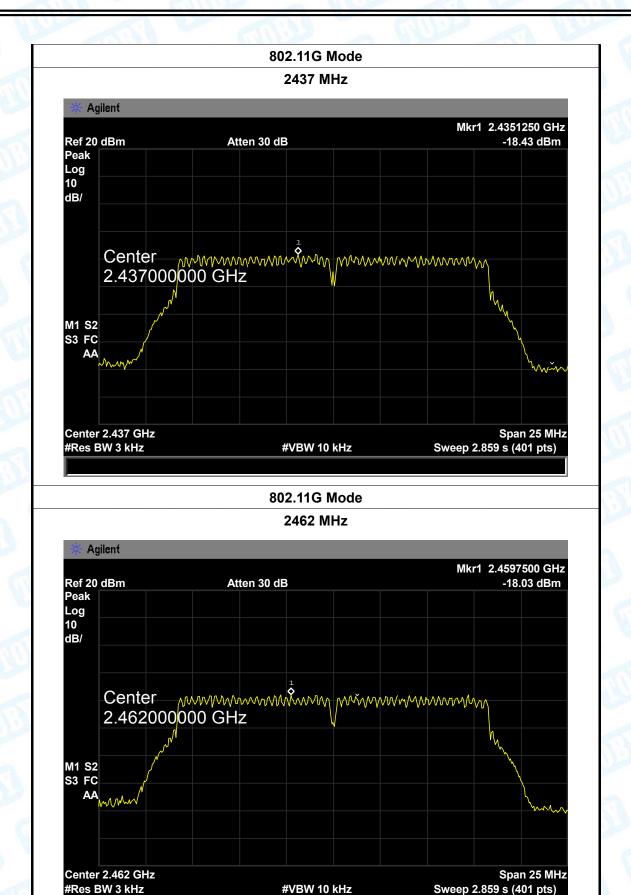
EUT:	CAR DVR	3	Model:	XM-JPL1-1
Temperature:	25 ℃		Temperature:	25 ℃
Test Voltage:	DC 12V		133	
Test Mode:	TX 802.11	11G Mode		
Channel Frequ	uency	Power Density		Limit (dBm)
(MHz)		(3 kHz	/dBm)	
2412		-18	.10	
2437		-18	.43	8
2462		-18.03		
		802.110	G Mode	

### 2412 MHz





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2462

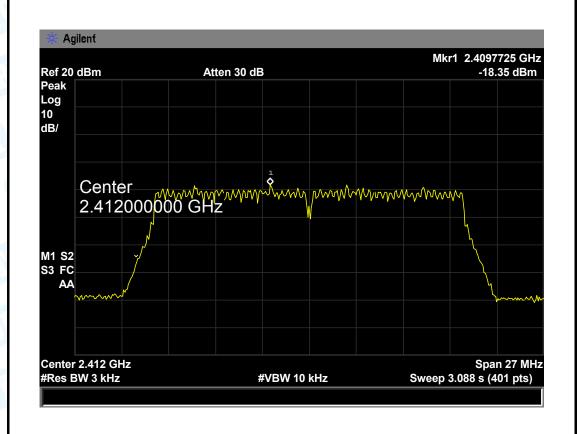
Report No.: TB-FCC144022

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EUT:	CAR DVR		Model:		XM-JPL1-1	M
Temperature:	25 ℃	11130	Temperature:		25 ℃	
Test Voltage:	DC 12V	Charles and	13:0 F	6	THE STATE OF	
Test Mode:	TX 802.11N(HT20) Mode				3	
Channel Frequency		Power Density				
Channel Freq	uency	Power	Density		Limit (dBm)	
Channel Freq (MHz)	uency		Density /dBm)		Limit (dBm)	
-	uency		/dBm)		Limit (dBm)	

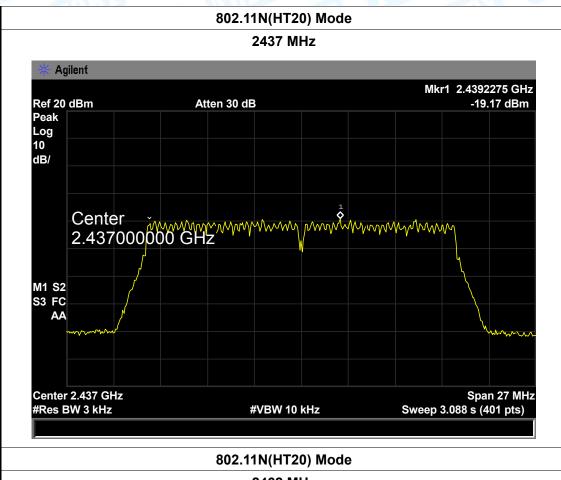
-19.05 **802.11N(HT20) Mode** 

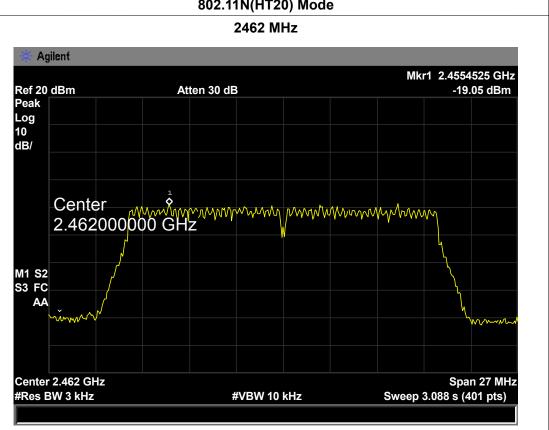
#### 2412 MHz





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# 10. Antenna Requirement

### 10.1 Standard Requirement

10.1.1 Standard FCC Part 15.203

### 10.1.2 Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall 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 manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

### 10.2 Antenna Connected Construction

The directional gains of the antenna used for transmitting is 2 dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

### 10.3 Result

The EUT antenna is a FPC Antenna. It complies with the standard requirement.

Antenna Type		
	▼ Permanent attached antenna	
Min	□ Unique connector antenna	
CHIEF !	□ Professional installation antenna	