FCC Test Report

Report No.: AGC05915170612FE04

FCC ID	:	2AB7K-R2120
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	Roav DashCam C1 Pro
BRAND NAME	:	Roav
MODEL NAME	:	R2120
CLIENT	:	Anker Technology Co., Limited
DATE OF ISSUE	:	July 07, 2017
STANDARD(S) TEST PROCEDURE(S)	:	FCC Part 15.247 KDB 558074 D01 DTS Meas Guidance v04
REPORT VERSION	:	V1.0



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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes	
V1.0	/	July 07, 2017	Valid	Original Report	

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Applicant	Anker Technology Co., Limited	
Address Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hong Kong		
Manufacturer	Anker Technology Co., Limited	
Address	Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hong Kong	
Product Designation	Roav DashCam C1 Pro	
Brand Name	Roav	
Test Model	R2120	
Date of test	July 05, 2017 to July 07, 2017	
Deviation	None	
Condition of Test Sample	Normal	
Test Result	Pass	
Report Template	AGCRT-US-BGN/RF	

1. VERIFICATION OF CONFORMITY

We hereby certify that:

The above equipment was tested by Dongguan Precise Testing Service Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.247.

Max Zha Tested by Max Zhang(Zhang Yi) July 07, 2017 BONPL Nie Reviewed by Bart Xie(Xie Xiaobin)) July 07, 2017 Approved by Solger Zhang(Zhang Hongyi) July 07, 2017 Authorized Officer

2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as "Roav DashCam C1 Pro". It is designed by way of utilizing the DSSS and OFDM technology to achieve the system operation.

Operation Frequency	2.412 GHz~2.462GHz
Output Power	IEEE 802.11b:14.45dBm; IEEE 802.11g:11.53dBm; IEEE 802.11n(20):10.35dBm; IEEE 802.11n(40):6.05dBm
Modulation	DSSS(DBPSK/DQPSK/CCK);OFDM(BPSK/QPSK/16-QAM/64-QAM)
Number of channels	11
Hardware Version	RoavC1Pro_HW_V1.0
Software Version	RoavC1Pro_SW_V1.0
Antenna Designation	Internal Antenna (Met 15.203 Antenna requirement)
Antenna Gain	-0.39dBi
Power Supply	DC 5V by Micro USB

A major technical description of EUT is described as following

Note: The USB is used to connect EUT to DC Power.

2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency		
_	1	2412 MHZ		
	2	2417 MHZ		
	3	2422 MHZ		
	4	2427 MHZ		
	5	2432 MHZ		
2400~2483.5MHZ	6	2437 MHZ		
	7	2442 MHZ		
	8	2447 MHZ		
	9	2452 MHZ		
	10	2457 MHZ		
	11	2462 MHZ		

Note: For 20MHZ bandwidth system use Channel 1 to Channel 11 For 40MHZ bandwidth system use Channel 3 to Channel 9

MCS Index	Nss	Modulation	R	NBPSC	NCBPS		NCBPS NDBPS		rate(I	ata Abps) nsGl
					20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
0	1	BPSK	1/2	1	52	108	26	54	6.5	13.5
1	1	QPSK	1/2	2	104	216	52	108	13.0	27.0
2	1	QPSK	3/4	2	104	216	78	162	19.5	40.5
3	1	16-QAM	1/2	4	208	432	104	216	26.0	54.0
4	1	16-QAM	3/4	4	208	432	156	324	39.0	81.0
5	1	64-QAM	2/3	6	312	648	208	432	52.0	108.0
6	1	64-QAM	3/4	6	312	648	234	489	58.5	121.5
7	1	64-QAM	5/6	6	312	648	260	540	65.0	135.0

2.3. IEEE 802.11N MODULATION SCHEME

Symbol	Explanation	
NSS	Number of spatial streams	
R	Code rate	
NBPSC	Number of coded bits per single carrier	
NCBPS	Number of coded bits per symbol	
NDBPS	Number of data bits per symbol	
GI	Guard interval	

2.4. RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2AB7K-R2120** filing to comply with the FCC Part 15 requirements.

2.5. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013). Radiated testing was performed at an antenna to EUT distance 3 meters.

Others testing (listed at item 5.3) was performed according to the procedures in FCC Part 15.247 rules KDB 558074 D01 DTS Meas Guidance v04.

2.6. SPECIAL ACCESSORIES

Refer to section 5.2.

2.7. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

3. MEASUREMENT UNCERTAINTY

Conducted measurement: +/- 3.18dB Radiated measurement: +/- 3.91dB

4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION					
1	Low channel TX					
2	Middle channel TX					
3	High channel TX					
4	Normal operating					
Transm						

Transmit by 802.11n (20MHz) with Date rate (6.5/13/19.5/26/39/52/58.5/65)

Transmit by 802.11n (40MHz) with Date rate

(13.5/27/40.5/54/81/108/121.5/135)

Note:

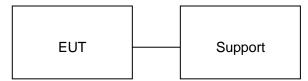
1. The EUT has been set to operate continuously on the lowest, middle and highest operation frequency Individually, and the eut is operating at its maximum duty cycle>or equal 98%

- 2. All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.
- 3. For Radiated Emission, 3axis were chosen for testing for each applicable mode.

5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Configure 1: Only for AC Power line Conducted



Configure 2:

EUT	Accessory		Car battery

5.2. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	Roav DashCam C1 Pro	R2120	2AB7K-R2120	EUT
2	Car charger	R5151	Input: DC12/24V Output: DC5V/3.4A	Maketed
3	Adapter	A22W050200US	AC100-240V 50/60Hz DC 5V/2A	Support

5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.247	Output Power	Compliant
§15.247	6 dB Bandwidth	Compliant
§15.247	Conducted Spurious Emission	Compliant
§15.247	Maximum Conducted Output Power SPECTRAL Density	Compliant
§15.209	Radiated Emission	Compliant
§15.247	Band Edges	Compliant
§15.207	Conducted Emission	Compliant

6. TEST FACILITY

Site	Dongguan Precise Testing Service Co., Ltd.	
Location	Building D, Baoding Technology Park, Guangming Road2, Dongcheng District, Dongguan, Guangdong, China.	
FCC Registration No.	371540	
Description	The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2014.	

ALL TEST EQUIPMENT LIST

Radiated Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	July 2, 2017	July 1, 2018
Trilog Broadband Antenna (25M-1GHz)	SCHWARZBECK	VULB9160	9160-3355	July 2, 2017	July 1, 2018
Signal Amplifier	SCHWARZBECK	BBV 9475	9745-0013	July 2, 2017	July 1, 2018
RF Cable	SCHWARZBECK	AK9515E	96221	July 2, 2017	July 1, 2018
3m Anechoic Chamber	CHENGYU	966	PTS-001	July 2, 2017	July 1, 2018
MULTI-DEVICE Positioning Controller	Max-Full	MF-7802	MF780208339	N/A	N/A
Active loop antenna (9K-30MHz)	Schwarzbeck	FMZB1519	1519-038	June 2, 2017	June 1, 2018
Spectrum analyzer	Agilent	E4407B	MY46185649	June 2, 2017	June 1, 2018
Power Sensor	Agilent	U2021XA	MY55050474	June 2, 2017	June 1, 2018
Horn Antenna (1G-18GHz)	SCHWARZBECK	BBHA9120D	9120D-1246	June 2, 2017	June 1, 2018
Horn Ant (18G-40GHz)	Schwarzbeck	BBHA 9170	9170-181	June 2, 2017	June 1, 2018

Conducted Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	June 2, 2017	June 1, 2018
Artificial Mains Network	Narda	L2-16B	000WX31025	June 2, 2017	June 1, 2018
Artificial Mains Network (AUX)	Narda	L2-16B	000WX31026	June 2, 2017	June 1, 2018
RF Cable	SCHWARZBECK	AK9515E	96222	June 2, 2017	June 1, 2018
Shielded Room	CHENGYU	843	PTS-002	June 2, 2017	June 1, 2018

7. OUTPUT POWER

7.1. MEASUREMENT PROCEDURE

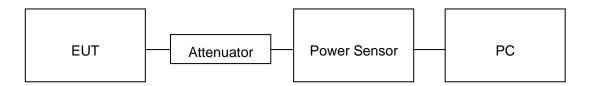
For average power test:

- 1. Connect EUT RF output port to power sensor through an RF attenuator.
- 2. Connect the power sensor to the PC.
- 3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 4. Record the maximum power from the software.

Note : The EUT was tested according to KDB 558074v03r05 for compliance to FCC 47CFR 15.247 requirements.

7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

AVERAGE POWER SETUP



7.3. LIMITS AND MEASUREMENT RESULT

TEST ITEM	OUTPUT POWER
TEST MODE	802.11b with data rate 1

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	13.24	30	Pass
2.437	13.56	30	Pass
2.462	14.45	30	Pass

TEST ITEM	OUTPUT POWER
TEST MODE	802.11g with data rate 6

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	10.54	30	Pass
2.437	11.41	30	Pass
2.462	11.53	30	Pass

TEST ITEM	OUTPUT POWER
TEST MODE	802.11n 20 with data rate 6.5

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	9.85	30	Pass
2.437	10.12	30	Pass
2.462	10.35	30	Pass

TEST ITEM	OUTPUT POWER
TEST MODE	802.11n 40 with data rate 6.5

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.422	5.18	30	Pass
2.437	5.54	30	Pass
2.452	6.05	30	Pass

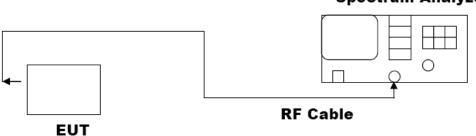
8.6 DB BANDWIDTH

8.1. MEASUREMENT PROCEDURE

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz, VBW \ge 3×RBW.
- 4. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



Spectrum Analyzer

8.3. LIMITS AND MEASUREMENT RESULTS

TEST ITEM	6DB BANDWIDTH
TEST MODE	802.11b with data rate 11

	LIMITS AND MEAS	UREMENT RESULT	
Appliachla Limita		Applicable Limits	
Applicable Limits	Test Da	ta (MHz)	Criteria
	Low Channel	10.03	PASS
>500KHZ	Middle Channel	10.05	PASS
	High Channel	10.07	PASS

TEST ITEM	6DB BANDWIDTH
TEST MODE	802.11g with data rate 54

	LIMITS AND MEAS	UREMENT RESULT	
Annlinghla Limita		Applicable Limits	
Applicable Limits	Test Dat	ta (MHz)	Criteria
	Low Channel	16.35	PASS
>500KHZ	Middle Channel	16.34	PASS
	High Channel	16.41	PASS

TEST ITEM	6DB BANDWIDTH
TEST MODE	802.11n 20 with data rate 65

	LIMITS AND MEAS	UREMENT RESULT	
Applicable Limite		Applicable Limits	
Applicable Limits	Test Da	ta (MHz)	Criteria
	Low Channel	17.60	PASS
>500KHZ	Middle Channel	17.59	PASS
	High Channel	17.60	PASS

TEST ITEM	6DB BANDWIDTH
TEST MODE	802.11n 40 with data rate 65

	LIMITS AND MEAS	UREMENT RESULT	
Annlinghla Limita		Applicable Limits	
Applicable Limits	Test Da	ta (MHz)	Criteria
	Low Channel	36.27	PASS
>500KHZ	Middle Channel	36.28	PASS
	High Channel	35.81	PASS



802.11b TEST RESULT TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL





TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

802.11g TEST RESULT

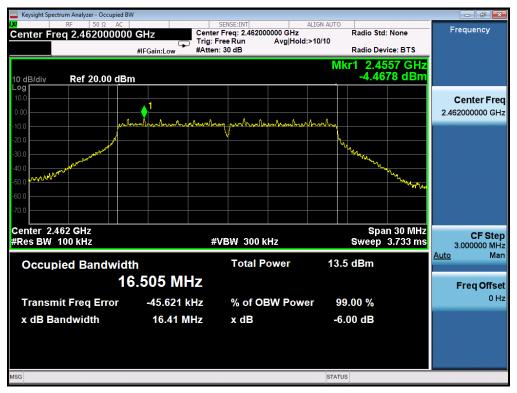
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

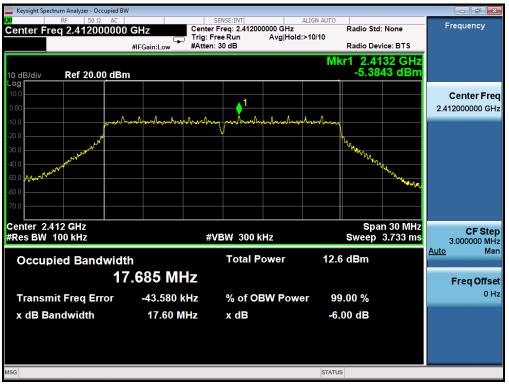




TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

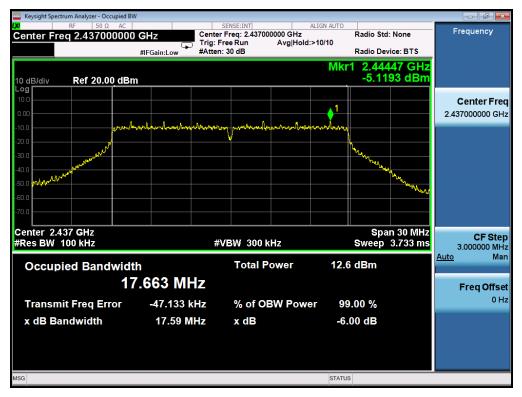


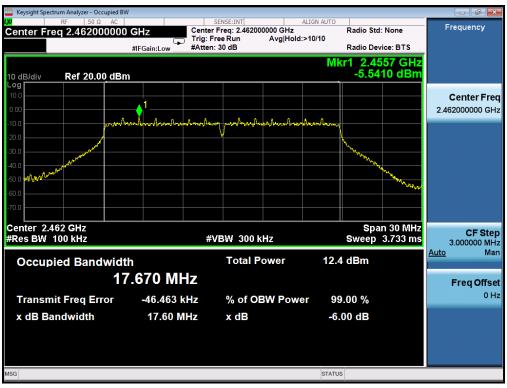


802.11n (20) TEST RESULT

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

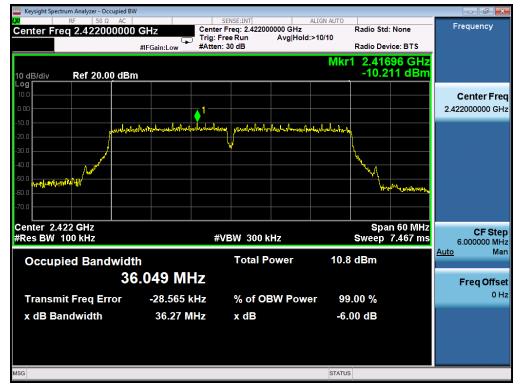




TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

802.11n (40) TEST RESULT

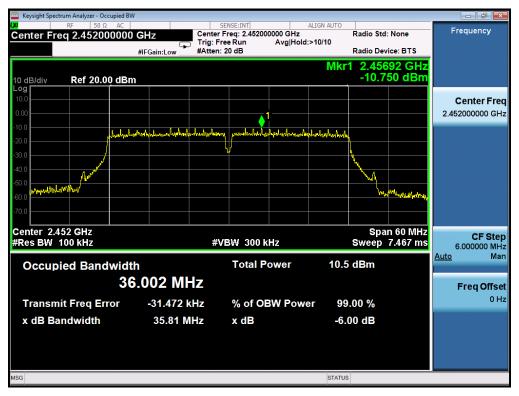
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL





TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



9. CONDUCTED SPURIOUS EMISSION

9.1. MEASUREMENT PROCEDURE

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Trace 1 Max hold, then View.
- Note: The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements. Owing to satisfy the requirements of the number of measurement points, we set the RBW=1MHz, VBW > RBW, scan up through 10th harmonic, and consider the tested results as the worst case, if the tested results conform to the requirement, we can deem that the real tested results(set the RBW=100KHz, VBW > RBW) are conform to the requirement.

9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

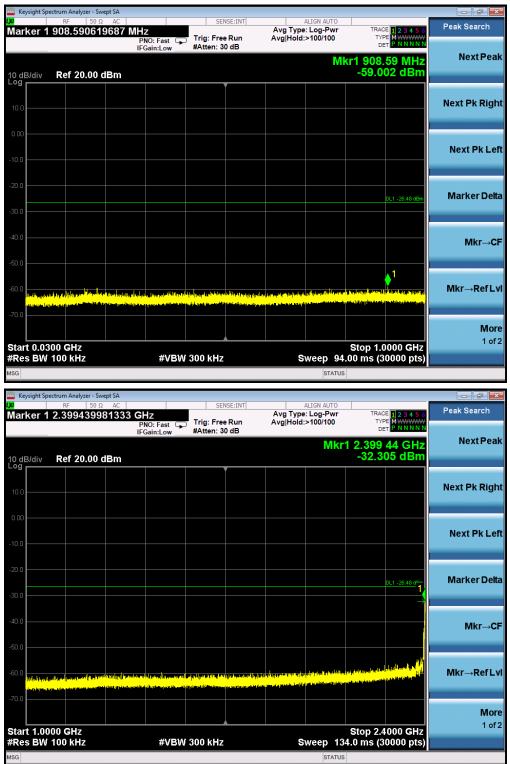
The same as described in section 8.2.

9.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.

9.4. LIMITS AND MEASUREMENT RESULT

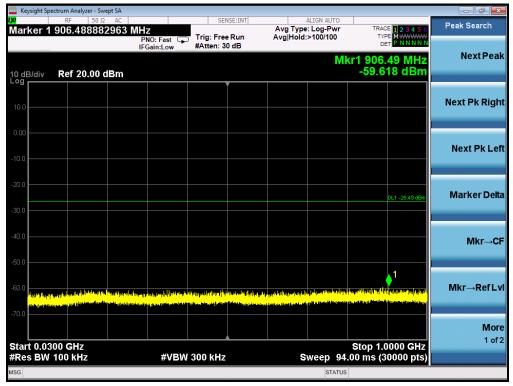
LIMITS AND MEA	SUREMENT RESULT	
Applieghte Limite	Measurement Re	sult
Applicable Limits	Test Data	Criteria
In any 100 KHz Bandwidth Outside the	At least -20dBc than the limit	
frequency band in which the spread spectrum	Specified on the BOTTOM	PASS
intentional radiator is operating, the radio frequency	Channel	
power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power. In addition, radiation emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in§15.209(a))	At least -20dBc than the limit Specified on the TOP Channel	PASS



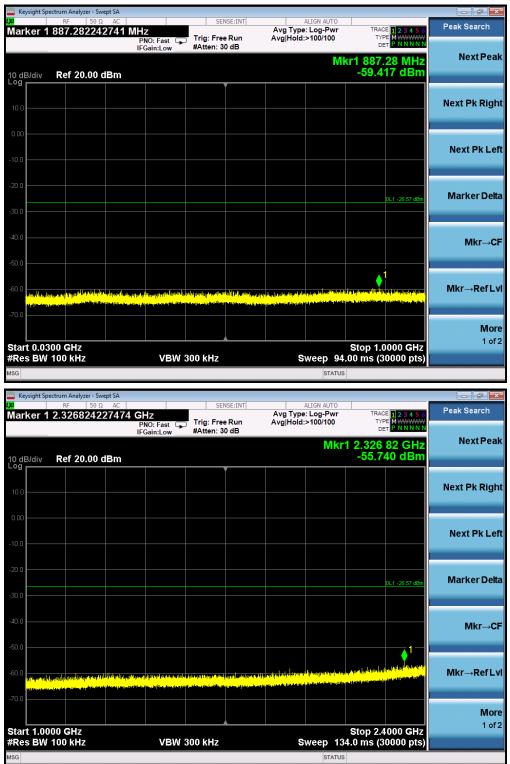
TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF 802.11b FOR MODULATION IN LOW CHANNEL

		ALIGN AUTO	NSE:INT	0.5			ctrum Analyzer - Sv RF 50 S	Keysight Sp
Peak Search	TRACE 1 2 3 4 5 6 TYPE M WWWWW DET P N N N N N	e: Log-Pwr I:>100/100	e Run		GHz PNO: Fast Gain:Low	7924598	24.984237	
Next Pea	24.984 2 GHz -38.577 dBm	Mkr1		wither o	-Galli.Low		Ref 20.00	0 dB/div
Next Pk Rig								10.0
Next Pk Le								10.0
Marker De	DL1 -26.48 dBm							20.0
Mkr→C		and the state of the			and the state of the second state of the secon	يىرى يەتىرىلەر يىلىرى بىرىكە يىلىرى يەتىرىكە يىلىرى يېرىپىرى يېرىپىرى يېرىپىرى يېرىپىرى يېرىپىرى يېرىپىرى يېرى يېرىپىرى يېرىپىرى يېرى	a area th headaile	10.0
Mkr→RefL				ن بکاری ک ^ی کا ^{ری} ا				50.0
Мо 1 о	Stop 25.00 GHz	Sween 58 (3.0 MHz	#VBW			itart 2.48
	Stop 25.00 GHz 00 ms (30000 pts)	Sweep 58.0		3.0 MHz	#VBW			Start 2.48 Res BW

TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11b FOR MODULATION IN MIDDLE CHANNEL



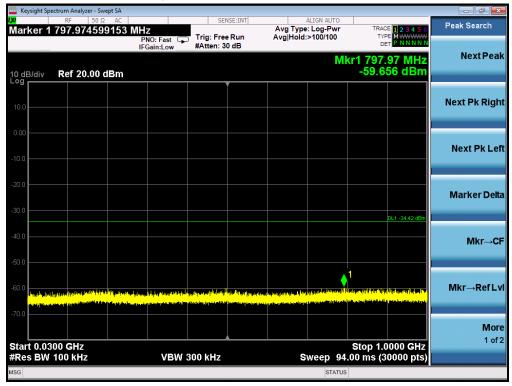
Keysight Sp	ectrum Analyzer - 5 RF 50	Ω AC		CEN	NSE:INT		ALIGN AUTO			
Marker 1	2.399859		SHz				e: Log-Pwr	TRACE	1 2 3 4 5 6	Peak Search
			PNO:Fast 🖵 FGain:Low	Trig: Free #Atten: 3		Avg Hold	:>100/100		M WWWWWW P N N N N N	
							Mkr1	2.399	86 GHz	NextPea
0 dB/div og	Ref 20.00	dBm						-54.11	7 dBm	
				Ì Ì	Î.					
10.0										Next Pk Rig
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								c	0L1 -26.49 dBm	Marker Del
30.0										
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										Мо
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Start 1.00 #Res BW			#VBW	300 kHz	·	s	weep 134.		000 GHz 0000 pts)	1 of
			#VBW	300 kHz	<u> </u>	S				1 of
#Res BW	100 kHz	Swent SA	#VBW	300 kHz	<u> </u>	\$	weep 134.			
#Res BW	100 kHz ectrum Analyzer - 1 RF 50	Ω ΑC			NSE:INT		SWEED 134.	.0 ms (30	0000 pts)	1 of
#Res BW	100 kHz	Ω AC 9649655	GHz PNO: Fast	SEN Trig: Free	NSE:INT	Avg Type	status	.0 ms (30	0000 pts)	- 0
#Res BW	100 kHz ectrum Analyzer - 1 RF 50	Ω AC 9649655	GHz	SEM	NSE:INT	Avg Type	ALIGN AUTO :>100/100	.0 ms (30 TRACE	1 2 3 4 5 6 MWWWWW P NNNN	- 0
Keysight Sp Keysight Sp Aarker 1	100 kHz ectrum Analyzer - 1 RF 50	Ω AC 9649655	GHz PNO: Fast	SEN Trig: Free	NSE:INT	Avg Type	ALIGN AUTO :>100/100	.0 ms (30 TRACE TYPE DET 24.986	0000 pts)	Peak Search
Keysight Sp Keysight Sp Aarker 1	100 kHz ectrum Analyzer - 3 RF 50 24.98648	Ω AC 9649655	GHz PNO: Fast	SEN Trig: Free	NSE:INT	Avg Type	ALIGN AUTO :>100/100	.0 ms (30 TRACE TYPE DET 24.986	123456 PNNNN 5 GHz	Peak Search
Keysight Sp Keysight Sp Aarker 1 0 dB/div	100 kHz ectrum Analyzer - 3 RF 50 24.98648	Ω AC 9649655	GHz PNO: Fast	SEN Trig: Free	NSE:INT	Avg Type	ALIGN AUTO :>100/100	.0 ms (30 TRACE TYPE DET 24.986	123456 PNNNN 5 GHz	Peak Search Next Pea
Keysight Sp Keysight Sp Aarker 1 0 dB/div	100 kHz ectrum Analyzer - 3 RF 50 24.98648	Ω AC 9649655	GHz PNO: Fast	SEN Trig: Free	NSE:INT	Avg Type	ALIGN AUTO :>100/100	.0 ms (30 TRACE TYPE DET 24.986	123456 PNNNN 5 GHz	Peak Search Next Pea
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#Res BW Isg Keysight Sp Ø Marker 1 0 dB/div 0 0 10 0 0.00	100 kHz ectrum Analyzer - 3 RF 50 24.98648	Ω AC 9649655	GHz PNO: Fast	SEN Trig: Free	NSE:INT	Avg Type	ALIGN AUTO :>100/100	.0 ms (30 TRACE TYPE DET 24.986	123456 PNNNN 5 GHz	Peak Search Next Pea Next Pk Rigi
#Res BW ssg	100 kHz ectrum Analyzer - 3 RF 50 24.98648	Ω AC 9649655	GHz PNO: Fast	SEN Trig: Free	NSE:INT	Avg Type	ALIGN AUTO :>100/100	.0 ms (30 TRACE TYPE DET 24.986	123456 PNNNN 5 GHz	Peak Search Next Pea Next Pk Rigi
#Res BW ISG Keysight Sp Marker 1 Narker 1 10 dB/div O dB/div	100 kHz ectrum Analyzer - 3 RF 50 24.98648	Ω AC 9649655	GHz PNO: Fast	SEN Trig: Free	NSE:INT	Avg Type	ALIGN AUTO :>100/100	ткасе туре 24.986 -38.14	123456 PNNNN 5 GHz	Peak Search Next Pea Next Pk Rig Next Pk Le
#Res BW ssg	100 kHz ectrum Analyzer - 3 RF 50 24.98648	Ω AC 9649655	GHz PNO: Fast	SEN Trig: Free	NSE:INT	Avg Type	ALIGN AUTO :>100/100	ткасе туре 24.986 -38.14	123456 M PNNNN 55GHz 8 dBm	Peak Search Next Pea Next Pk Rig Next Pk Le
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#Res BW SG Arker 1 0 dB/div 0 0 dB/div 0 0 dB/div 0 0 dB/div 0 0 0.00 0 0.00 0 0 0.00 0 0 0.00 0 0 0.00 0 0 0.00 0 0 0.00 0 0 0.00 0 0 0.00	100 kHz ectrum Analyzer - 3 RF 50 24.98648	Ω AC 9649655	GHz PNO: Fast	SEN Trig: Free	NSE:INT	Avg Type Avg Hold	ALIGN AUTO :>100/100	ткасе туре 24.986 -38.14	123456 M PNNNN 55GHz 8 dBm	Peak Search Next Pea Next Pk Rig Next Pk Le
Res BW SG Keysight Sp Ø Aarker 1 O dB/div O dB/div 0 0.00 .000 .000 .000 .000 .000 .000 .000 .000 .000 .000 .000 .000	100 kHz ectrum Analyzer - 3 RF 50 24.98648	Ω AC 9649655	GHz PNO: Fast	SEN Trig: Free	e Run 0 dB	Avg Type Avg Hold	Status	ткасе туре 24.986 -38.14	123456 M PNNNN 55GHz 8 dBm	Peak Search Next Pea Next Pk Rig Next Pk Le
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#Res BW SG Keysight Sp Aarker 1 0 dB/div 0 0 0	100 kHz ectrum Analyzer - 3 RF 50 24.98648	Ω AC 9649655	GHz PNO: Fast	SEN Trig: Free	e Run 0 dB	Avg Type Avg Hold	ALIGN AUTO E: Log-Pwr :>100/100 Mkr1	ткасе туре 24.986 -38.14	123456 M PNNNN 55GHz 8 dBm	Peak Search Next Pea Next Pk Rig Next Pk Le Marker Del
#Res BW Isc Keysight Sp Aarker 1 0 dB/div 0 0 10 0 0 0 20 0 30 0 40 0 50 0 50 0 50 0 50 0 50 0	100 kHz ectrum Analyzer - 3 RF 50 24.98648	Ω AC 9649655	GHz PNO: Fast	SEN Trig: Free	e Run 0 dB	Avg Type Avg Hold	ALIGN AUTO E: Log-Pwr :>100/100 Mkr1	ткасе туре 24.986 -38.14	123456 M PNNNN 55GHz 8 dBm	Peak Search Next Pea Next Pk Rig Next Pk Le Marker Del Mkr-C
#Res BW SG Keysight Sp Aarker 1 0 dB/div 0 0 0	100 kHz ectrum Analyzer - 3 RF 50 24.98648	Ω AC 9649655	GHz PNO: Fast	SEN Trig: Free	e Run 0 dB	Avg Type Avg Hold	ALIGN AUTO E: Log-Pwr :>100/100 Mkr1	ткасе туре 24.986 -38.14	123456 M PNNNN 55GHz 8 dBm	Peak Search Next Pea Next Pk Righ Next Pk Le Marker Deb MkrC
Res BW Reysight Sp Aarker 1 Aarker 1 0 dB/div 0 30.0 30.0 20.0 30.0 20.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0	100 kHz RF 50 24.98648 Ref 20.00	Ω AC 9649655	GHz PNO: Fast	SEN Trig: Free	e Run 0 dB	Avg Type Avg Hold	ALIGN AUTO E: Log-Pwr :>100/100 Mkr1	.0 ms (30 TRACE TYPE DET 24.986 -38.14	1 2 3 4 5 6 N N N N N P N N N N N 5 GHz 8 dBm 1 1 1 1 1 1 1 1 1 1 1 1 1	Peak Search Next Pea Next Pk Rig Next Pk Le Marker Del Mkr→Ref L
Ress BW SG Keysight Sp Aarker 1 0 <t< td=""><td>100 kHz RF 50 24.98648 Ref 20.00</td><td>Ω AC 9649655</td><td>GHZ PNO: Fast FGain:Low</td><td>SEN Trig: Free</td><td></td><td>Avg Type Avg Hold</td><td>ALIGN AUTO E: Log-Pwr :>100/100 Mkr1</td><td>0 ms (30</td><td>1 2 3 4 5 6 M</td><td>Peak Search</td></t<>	100 kHz RF 50 24.98648 Ref 20.00	Ω AC 9649655	GHZ PNO: Fast FGain:Low	SEN Trig: Free		Avg Type Avg Hold	ALIGN AUTO E: Log-Pwr :>100/100 Mkr1	0 ms (30	1 2 3 4 5 6 M	Peak Search



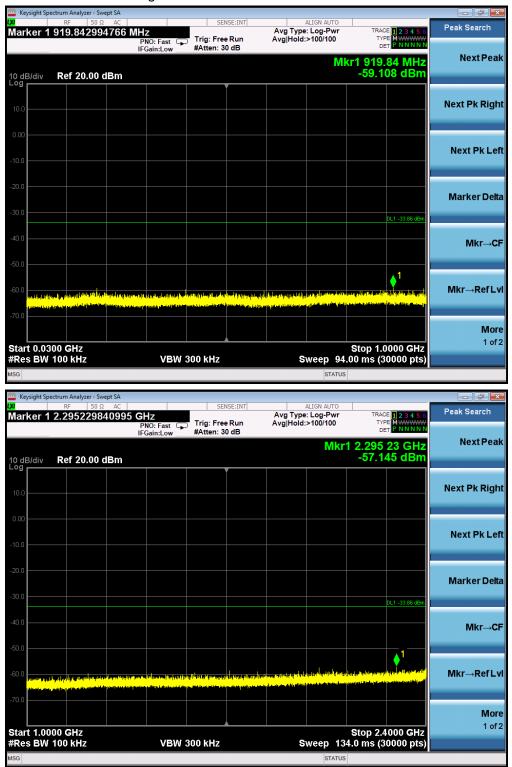
TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11b FOR MODULATION IN HIGH CHANNEL



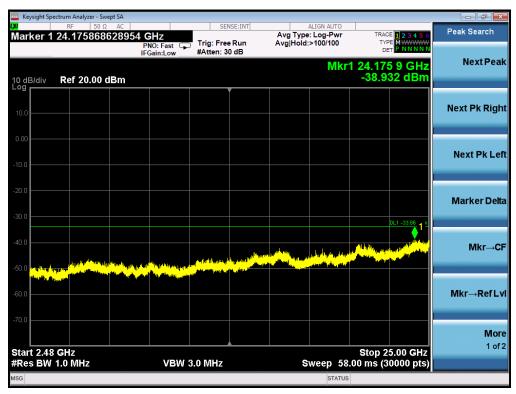
TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF 802.11g FOR MODULATION IN LOW CHANNEL



Keysight Sp	RF 5	0Ω AC		SEI	NSE:INT		ALIGN AUTO			
larker 1	2.399719	9990666	GHZ PNO: Fast 🖵	Trig: Free			e: Log-Pwr :>100/100	TRAC	CE 1 2 3 4 5 6 PE MWWWW ET P NNNNN	Peak Search
			IFGain:Low	#Atten: 3	0 dB		Mkr		72 GHz	NextPea
0 dB/div	Ref 20.0	0 dBm						-40.7	36 dBm	
.ºg					Ĭ					
10.0										Next Pk Rig
0.00										
0.00										Next Pk Le
10.0										
20.0										
										Marker De
30.0									DL1 -34.42 dFm	
40.0										Mkr. (
										Mkr→C
50.0										
60.0	an a	trans ^{ta} rn ^{Dist} olation (C., as inter-	a na ang araw pananang	anga data sa	Install in Doublet	a de la constant de l	a li poste a ^{ll} itteres	and the other	an dah nalah kat	Mkr→RefL
	alas at hit a state of the south	enders Carles and a service	aliti and an increase in the	<mark>n ja anisi Laburah</mark>	tentune, at fiéleti	n an		n da site in finanzai in		
70.0										Мо
Start 1.00				<u> </u>				Stop 2.4	4000 GHz	1 oi
	100 GH2		VBW	300 kHz		S	weep 13			
			VBW	300 kHz		S	Sweep 13	4.0 ms (3		
Res BW	100 kHz		VBW		NCE-INT		STATUS	4.0 ms (3		
Keysight Sp	100 kHz	OΩ AC	GHz	SEI	NSE:INT	Avg Type	STATUS	4.0 ms (3	20000 pts)	Peak Search
Keysight Sp	100 kHz Pectrum Analyzer - RF 5	ο Ω AC 15860529		SEI	e Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	4.0 ms (3 TRAC TYI DI	22 1 2 3 4 5 6 PET P N N N N	Peak Search
Res BW sg Keysight Sp Aarker 1	100 kHz	0 Ω AC 15860529	GHz PNO: Fast) Trig: Free	e Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	4.0 ms (3	E 123456 PR NNNN 3 3 GHz	Peak Search
Keysight Sp Keysight Sp Aarker 1 0 dB/div	100 kHz Pectrum Analyzer - RF 5	0 Ω AC 15860529	GHz PNO: Fast) Trig: Free	e Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	4.0 ms (3	22 1 2 3 4 5 6 PET P N N N N	Peak Search
Keysight Sp Keysight Sp Aarker 1 0 dB/div	100 kHz	0 Ω AC 15860529	GHz PNO: Fast) Trig: Free	e Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	4.0 ms (3	E 2 3 4 5 6 E M WWWWW F P NNNN 3 3 GHz	Peak Search Next Pea
Res BW sg Keysight Sp 9 Aarker 1 0 dB/div 0 dB/div	100 kHz	0 Ω AC 15860529	GHz PNO: Fast) Trig: Free	e Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	4.0 ms (3	E 2 3 4 5 6 E M WWWWW F P NNNN 3 3 GHz	Peak Search Next Pea
fRes BW sg Sg Sg Sg Sg Sg Sg Sg Sg Sg Sg Sg Sg Sg	100 kHz	0 Ω AC 15860529	GHz PNO: Fast) Trig: Free	e Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	4.0 ms (3	E 2 3 4 5 6 E M WWWWW F P NNNN 3 3 GHz	Peak Search Next Pea Next Pk Rig
#Res BW ssg	100 kHz	0 Ω AC 15860529	GHz PNO: Fast) Trig: Free	e Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	4.0 ms (3	E 2 3 4 5 6 E M WWWWW F P NNNN 3 3 GHz	Peak Search Next Pea Next Pk Rig
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#Res BW ssg Keysight Sp 0 Marker 1 10.0 10.0 10.0	100 kHz	0 Ω AC 15860529	GHz PNO: Fast) Trig: Free	e Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	4.0 ms (3	E 2 3 4 5 6 E M WWWWW F P NNNN 3 3 GHz	Peak Search Next Pea Next Pk Rig Next Pk Le
#Res BW sg Sg Keysight Sp 0 Marker 1 0.00 10.0 20.0	100 kHz	0 Ω AC 15860529	GHz PNO: Fast) Trig: Free	e Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	4.0 ms (3	23456 E 23456 F P NNNN 3 3 GHz 02 dBm	Peak Search Next Pea Next Pk Rig Next Pk Le
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Ress BW SG Keysight Sp Aarker 1 Aarker 1 0 dB/div 0 0 10 0 20 0 30 0	100 kHz	0 Ω AC 15860529	GHz PNO: Fast) Trig: Free	e Run	Avg Type Avg Hold	STATUS ALIGN AUTO E: Log-Pwr :>100/100 MKr	4.0 ms (3	23456 E 23456 F P NNNN 3 3 GHz 02 dBm	Peak Search Next Pea Next Pk Rig Next Pk Le Marker De
#Res BW Isc Isc Keysight Sp Isc Aarker 1 Isc 0 dB/div Isc 0 0 00 Isc 10 0 Isc 10 0	100 kHz	0 Ω AC 15860529	GHz PNO: Fast) Trig: Free	e Run	Avg Type Avg Hold	ALIGN AUTO e: Log-Pwr :>100/100	4.0 ms (3	23456 23456 E Manager 23456 F NNNN 33GHz 02dBm 02dBm 011-3442 1 2000000000000000000000000000000000000	Peak Search Next Pea Next Pk Rig Next Pk Le Marker De
#Res BW Keysight Sp. Marker 1 Marker 1 Marker 1 10.0 0 0.00 0	100 kHz	0 Ω AC 15860529	GHz PNO: Fast) Trig: Free	e Run 0 dB	Avg Type Avg Hold	STATUS ALIGN AUTO E: Log-Pwr :>100/100 MKr	4.0 ms (3	23456 23456 E Manager 23456 F NNNN 33GHz 02dBm 02dBm 011-3442 1 2000000000000000000000000000000000000	Peak Search Next Pea Next Pk Rig Next Pk Le Marker De Mkr→C
#Res BW Isc Isc Keysight Sp Isc Aarker 1 Isc 0 0 10.0 Isc 30.0 Isc 40.0 Isc 50.0 Isc 10.0 Isc	100 kHz	0 Ω AC 15860529	GHz PNO: Fast) Trig: Free	e Run 0 dB	Avg Type Avg Hold	STATUS ALIGN AUTO E: Log-Pwr :>100/100 MKr	4.0 ms (3	23456 23456 E Manager 23456 F NNNN 33GHz 02dBm 02dBm 011-3442 1 2000000000000000000000000000000000000	Peak Search Next Pea Next Pk Rig Next Pk Lo Marker De Mkr→0
#Res BW Isc Isc Keysight Sp Isc Aarker 1 Isc 0 dB/div Isc 0 0 00 Isc 10 0 Isc 10 0	100 kHz	0 Ω AC 15860529	GHz PNO: Fast) Trig: Free	e Run 0 dB	Avg Type Avg Hold	STATUS ALIGN AUTO E: Log-Pwr :>100/100 MKr	4.0 ms (3	23456 23456 E Manager 23456 F NNNN 33GHz 02dBm 02dBm 011-3442 1 2000000000000000000000000000000000000	Peak Search Next Pea Next Pk Rig Next Pk Le Marker De Mkr→C
Res BW SG SG Keysight Sp Image: Sp Marker 1 Image: Sp 0 dB/div 0 dB	2 100 kHz	0 Ω AC 15860529	GHz PNO: Fast) Trig: Free	e Run 0 dB	Avg Type Avg Hold	STATUS ALIGN AUTO E: Log-Pwr :>100/100 MKr	4.0 ms (3	00000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Lo Marker De Mkr→C
Res BW SG SG Keysight Sp Marker 1 Marker 1 Marker 1 0 GB/div 9 Marker 1 10 GB/div 9 Marker 1 10 GB/div 10 GB/div	2 100 kHz	0 Ω AC 15860529	CHZ PNO: Fast IFGain:Low) Trig: Free		Avg Type Avg Hold	STATUS ALIGN AUTO E: Log-Pwr :>100/100 MKr	4.0 ms (3	5.00 GHz	



TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11g FOR MODULATION IN MIDDLE CHANNEL

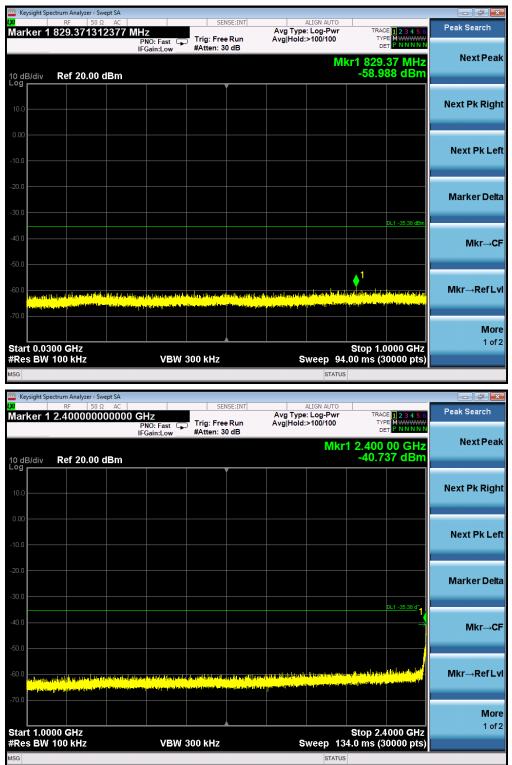


TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE

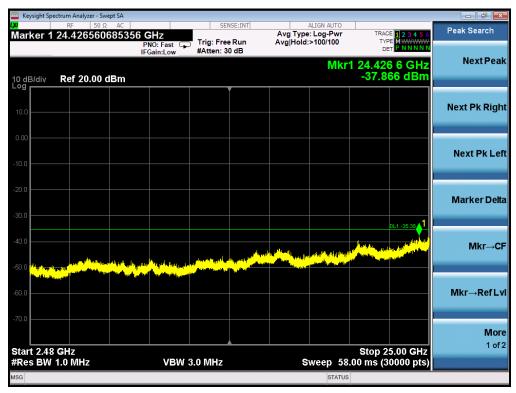
OF 802.11g FOR MODULATION IN HIGH CHANNEL

a i i i		Ω AC		SEI	NSE:INT		ALIGN AUTO			Peak Search
larker	1 876.5148		Z PNO: Fast ⊂ FGain:Low	Trig: Free #Atten: 3		Avg Type Avg Hold:	:: Log-Pwr :>100/100	TRAC TYP DE	E 1 2 3 4 5 6 E MWWWWW T P N N N N N	
0 dB/div	Ref 20.00	0 dBm					Mk	r1 876. -59.2	51 MHz 08 dBm	NextPeal
10.0										Next Pk Righ
0.00										Next Pk Le
20.0										Marker Del
40.0									DL1 -34.47 dBm	Mkr→C
50.0								¢ ¹		Mkr→RefL
70.0	y g Hapilik og av lyndel i Nindelik Se at hapilik og av sener af her finsen.	ing all a shirt for the start of the start o	y in all your of Appendiate New International Contraction (Contraction	in yang di Pangal di Pangar di Panga Katal di Panganan yang di Pangar di	a serie and a serie and a serie of a serie of a serie of a series	delege (sondal) books The second states	ann fingerine (1996) Geografie (1996) Geografie (1996)	a la superior de la s La superior de la superior de la La superior de la superior de	and a second second second	
	300 GHz V 100 kHz		VBW	300 kHz		s	weep 94.	Stop 1.0 00 ms <u>(3</u>	0000 GHz 0000 pts)	Mor 1 of
SG							STATUS			

Keysight Sp		Ω AC		SEN	NSE:INT		ALIGN AUTO			
larker 1	1 2.374239	141305 (GHZ PNO: Fast 😱	Trig: Free		Avg Type Avg Hold	e: Log-Pwr :>100/100	TRAC TYP	DE 123456 PE MWWWW ET P NNNNN	Peak Search
			IFGain:Low	#Atten: 3	0 dB					NextPe
) dB/div	Ref 20.00	dBm					MKL	-57.7	24 GHz 90 dBm	
	Kei 20.00									
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	000 GHz / 100 kHz							Stop 2.4	1000 GHz	1 0
KES DW										
36	TOO KIIZ		VDW	300 kHz		5	weep 13	4.0 MS (J	iuuuu pts)	
G	100 KHZ		VBW			8	STATUS	4.0 MS (3	ouuu pts)	
	pectrum Analyzer - S				VSE:INT		STATUS	4.0 ms (3	0000 prsj	
Keysight Sp	pectrum Analyzer - S	Ω AC	GHz	SEN	NSE:INT	Avg Type	STATUS	TRAC	DE 1 2 3 4 5 6	Peak Search
Keysight Sp	pectrum Analyzer - S RF 50	Ω AC 3210107		SEN	Run		ALIGN AUTO e: Log-Pwr :>100/100	TRAC TYP DE	CE 123456 PE M WWWW ET PNNNNN	Peak Search
Keysight Sp arker 1	pectrum Analyzer - 5 RF 50 1 24.41680	Ω AC 3210107	GHz PNO: Fast	SEN Trig: Free	Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	TRAC TYP DE 1 24.41		Peak Search
Keysight Sp larker 1 0 dB/div	pectrum Analyzer - S RF 50	Ω AC 3210107	GHz PNO: Fast	SEN Trig: Free	Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	TRAC TYP DE 1 24.41	CE 123456 PE M WWWW ET PNNNNN	
Keysight Sp larker 1	pectrum Analyzer - 5 RF 50 1 24.41680	Ω AC 3210107	GHz PNO: Fast	SEN Trig: Free	Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	TRAC TYP DE 1 24.41		Peak Search Next Pea
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Contraction of the second seco	pectrum Analyzer - 5 RF 50 1 24.41680	Ω AC 3210107	GHz PNO: Fast	SEN Trig: Free	Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	TRAC TYP DE 1 24.41		Peak Search Next Pea Next Pk Rig Next Pk Lu
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Keysight Sp Iarker 1	pectrum Analyzer - 5 RF 50 1 24.41680	Ω AC 3210107	GHz PNO: Fast	SEN Trig: Free		Avg Type Avg Hold	STATUS	TRAC TVI DP 1 24.41 -38.4	E 2 3 4 5 6 E M T P NNNN 6 8 GHz 72 dBm	Peak Search Next Pea Next Pk Rig Next Pk Lu Marker De
C dB/div G dB/div G O dB/div G O dB/div O d O d O dB/div O d O d O	pectrum Analyzer - 5 RF 50 1 24.41680	Ω AC 3210107	GHz PNO: Fast	SEN Trig: Free		Avg Type Avg Hold	STATUS	TRAC TYP DE 1 24.41	E 2 3 4 5 6 E M T P NNNN 6 8 GHz 72 dBm	Peak Search Next Pea Next Pk Rig Next Pk Lu Marker De
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Keysight Sp larker 1 0	pectrum Analyzer - 5 RF 50 1 24.41680	Ω AC 3210107	GHz PNO: Fast	SEN Trig: Free		Avg Type Avg Hold	STATUS	TRAC TVI DP 1 24.41 -38.4	E 2 3 4 5 6 E M T P NNNN 6 8 GHz 72 dBm	Peak Search Next Pea Next Pk Rig Next Pk Lu Marker De Mkr→0
	pectrum Analyzer - 5 RF 50 1 24.41680	Ω AC 3210107	GHz PNO: Fast	SEN Trig: Free		Avg Type Avg Hold	STATUS	TRAC TVI DP 1 24.41 -38.4	E 2 3 4 5 6 E M T P NNNN 6 8 GHz 72 dBm	Peak Search Next Pea Next Pk Rig Next Pk Lu Marker De
Keysight Sp larker 1 0	pectrum Analyzer - 5 RF 50 1 24.41680	Ω AC 3210107	GHz PNO: Fast	SEN Trig: Free		Avg Type Avg Hold	STATUS	TRAC TVI DP 1 24.41 -38.4	E 2 3 4 5 6 E M T P NNNN 6 8 GHz 72 dBm	Peak Search Next Pea Next Pk Rig Next Pk Lu Marker De Mkr→0
Keysight Sp arker 1 0 dB/div 9 0.0	pectrum Analyzer - 5 RF 50 1 24.41680	Ω AC 3210107	GHz PNO: Fast	SEN Trig: Free		Avg Type Avg Hold	STATUS	TRAC TVI DP 1 24.41 -38.4	E 2 3 4 5 6 E M T P NNNN 6 8 GHz 72 dBm	Peak Search Next Pe Next Pk Rig Next Pk Li Marker De Mkr→C
Keysight Sp arker 1 0	Ref 20.00	Ω AC 3210107	CHZ PNO: Fast IFGain:Low	SEN Trig: Free		Avg Type Avg Hold	STATUS	TRAC TY DI 1 24.411 -38.4	E 1 2 3 4 5 6 E M NNNN 6 8 GHz 72 dBm DL1 -34 47 71 0 0 0 0 0 0 0 0 0 0 0 0 0	Peak Search Next Pe Next Pk Rig Next Pk Li Marker De Mkr→t Mkr→Ref L



TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF 802.11n20 FOR MODULATION IN LOW CHANNEL

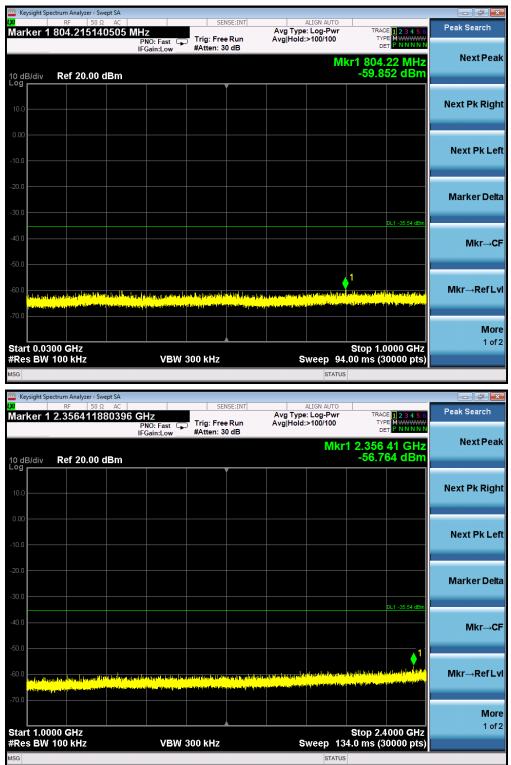


TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE

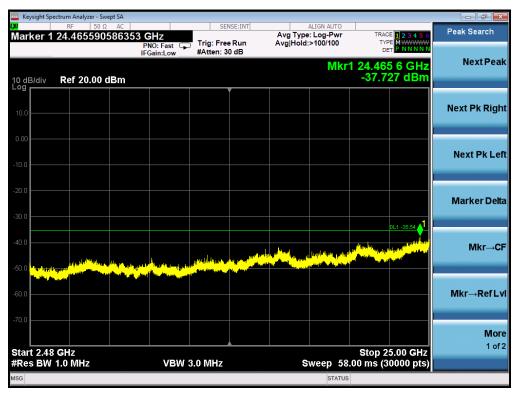
OF 802.11n20 FOR MODULATION IN MIDDLE CHANNEL

				INC. THIT			lyzer - Swept SA 50 Ω AC	ht Spectrum Analy RF	Keysi
Peak Search	TRACE 123456 TYPE MWWWW DET PNNNNN		Avg Type Avg Hold:			Z PNO: Fast ⊂ FGain:Low	02100070 M		/ ark
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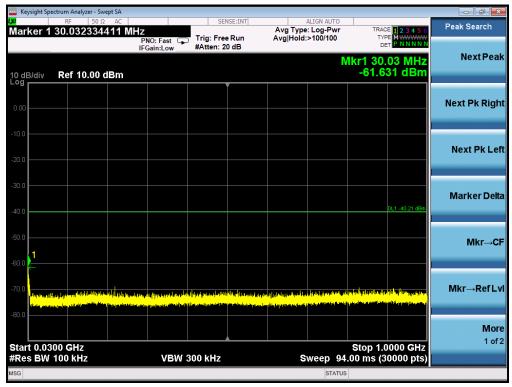
Keysight Spectrum Ana RF	alyzer - Swept SA 50 Ω AC		SEN	ISE:INT		ALIGN AUTO				
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0 <mark>Underschijt Crestingen</mark>	n phan and the bird by the ber	n hallen i henre her f					a dahi dina di	land the state of the state	Mkr→RefL	
on a statistic sector of the s	n <mark>a kan pulati bina katu y</mark> a	i leji le pineta de le	i jaile mär eksi för är sökkeden.	ary no silangan						
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art 1.0000 GH	z				Stop 2.4000 GHz Sweep 134.0 ms (30000 pts)					
art 1.0000 GH Res BW 100 kH	z Hz	VBW	300 kHz		s					
tes BW 100 kl	z Hz	VBW	300 kHz		S	weep 134 status				
es BW 100 kl	Hz	VBW		ISE:INT			1.0 ms (3	10000 pts)		
Res BW 100 kH	Hz alyzer - Swept SA 50 Ω AC 17796309877	GHz PNO: Fast	SEN	Run	Avg Type	STATUS	LO ms (3	80000 pts) ≊ 112 3 4 5 6	Peak Search	
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Res BW 100 kH	Hz alyzer - Swept SA 50 Ω AC 17796309877	GHz PNO: Fast	SEN	Run	Avg Type	ALIGN AUTO :: Log-Pwr :>100/100 MIKT1	I.0 ms (3	E0000 pts) E 123456 E M NNNN 7 8 GHz 29 dBm	Peak Search Next Pea Next Pk Rig Next Pk Le Marker Del Mkr→C	
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Keysight Spectrum Ana RF arker 1 24.40 dB/div Ref 2 dB/div Ref 2 dB/di	Hz alyzer - Swept SA 50 Ω AC 7796309877 1 20.00 dBm 20.00 dBm	GHz PNO: Fast FGain:Low	SEN Trig: Free #Atten: 30	Run	Avg Type Avg Hold	ALIGN AUTO :: Log-Pwr :>100/100 Mikr1	1.0 ms (3	23 4 5 6 E M 1 2 3 4 5 6 E M 1 2 5 6	Peak Search Next Pea Next Pk Rig Next Pk Le Marker Del Mkr→C	
Res BW 100 KH s Keysight Spectrum Ana RF arker 1 24.40	Hz alyzer - Swept SA 50 Ω AC 7796309877 1 20.00 dBm 20.00 dBm	GHz PNO: Fast FGain:Low	SEN	Run	Avg Type Avg Hold	ALIGN AUTO :: Log-Pwr :>100/100 MIKT1	1.0 ms (3	23 4 5 6 E M 1 2 3 4 5 6 E M 1 2 5 6	Peak Search Next Pea Next Pk Rig Next Pk Le Marker Del Mkr→C	



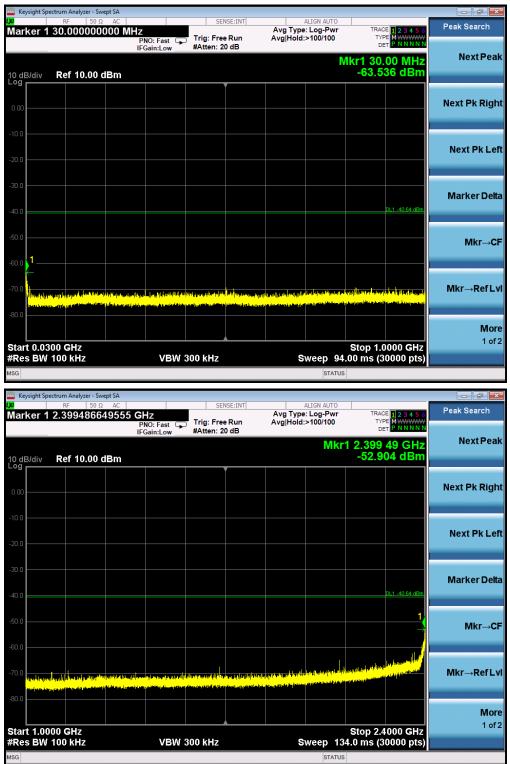
TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11n20 FOR MODULATION IN HIGH CHANNEL



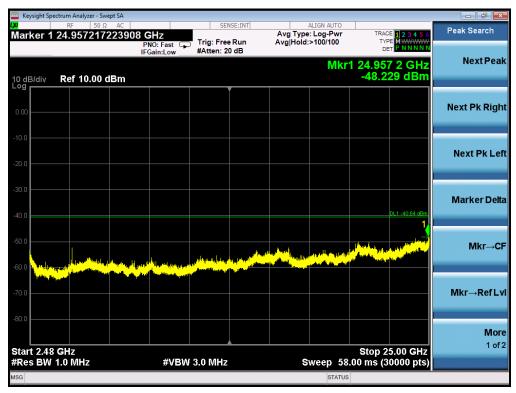
TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF 802.11n40 FOR MODULATION IN LOW CHANNEL



Keysight Sp 4	RF 5	Ω AC		SEM	SE:INT		ALIGN AUTO			
larker 1	2.399906	663555 0	GHz PNO: Fast 🖵	Trig: Free	Run		e: Log-Pwr :>100/100	TRAC TYP	E 1 2 3 4 5 6 E M WWWW T P N N N N N	Peak Search
			IFGain:Low	#Atten: 2		01				NextPe
							Mkr	1 2.399	91 GHz 29 dBm	NEXTER
0 dB/div . ^{og}	Ref 10.0	0 dBm		,				-40.0	29 UBIII	
										Next Pk Rig
0.00										Next 1 K Kig
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20.0										NOAT IN EX
30.0										Marker De
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										Mo 1 o
	000 GHz							Stop 2.4	000 GHz	10
Res BW	100 kHz		VBW 3	300 kHz		s	weep 13	4.0 ms (3	0000 pts)	
	100 kHz		VBW :	300 kHz		S	Sweep 13	4.0 ms (3	0000 pts)	
SG		Sweet SA	VBW (300 kHz				4.0 ms (3	0000 pts)	
SG Keysight Sp	pectrum Analyzer - RF 5	Ω AC			NSE:INT		STATUS	4.0 ms (3	0000 pts)	Peak Search
SG Keysight Sp	pectrum Analyzer -	Ω AC 1024368	GHz PNO: Fast 😱	SEN Trig: Free	Run	Avg Type	STATUS	4.0 ms (3	0000 pts) ≅ 112 3 4 5 6	Peak Search
SG Keysight Sp	pectrum Analyzer - RF 5	Ω AC 1024368	GHz	SEN	Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	4.0 ms (3 TRAC TYF DE	0000 pts)	
sg Keysight Sj Aarker 1	pectrum Analyzer - RF 5	Ω AC 1024368	GHz PNO: Fast 😱	SEN Trig: Free	Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	4.0 ms (3 TRAC TYP DE 1 24.97	0000 pts) ≅ 112 3 4 5 6	Peak Search
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Keysight Sp Marker 1 0 dB/div	RF 5 1 24.97523	Ω AC 1024368	GHz PNO: Fast 😱	SEN Trig: Free	Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	4.0 ms (3 TRAC TYP DE 1 24.97	0000 pts) E 123456 E Министрания 5 2 GHz	Peak Search Next Pea
Keysight Sp Marker 1 0 dB/div	RF 5 1 24.97523	Ω AC 1024368	GHz PNO: Fast 😱	SEN Trig: Free	Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	4.0 ms (3 TRAC TYP DE 1 24.97	0000 pts) E 123456 E Министрания 5 2 GHz	Peak Search Next Pea
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sg Keysight Sr Aarker 7 0 dB/div 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RF 5 1 24.97523	Ω AC 1024368	GHz PNO: Fast 😱	SEN Trig: Free	Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	4.0 ms (3 TRAC TYP DE 1 24.97	0000 pts) E 123456 E Министрания 5 2 GHz	Peak Search Next Pea Next Pk Rig
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SG Keysight Sp Ø	RF 5 1 24.97523	Ω AC 1024368	GHz PNO: Fast 😱	SEN Trig: Free	Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	4.0 ms (3 TRAC TYP DE 1 24.97	0000 pts) E 123456 E Министрания 5 2 GHz	Peak Search Next Pea Next Pk Rig
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sg Keyzight Sj Aarker 1 0 dB/div 9 0 00 10.0 20.0 40.0 50.0	Ref 10.01	Ω AC 1024368	GHz PNO: Fast 😱	SEN Trig: Free		Avg Typ Avg Hold	ALIGN AUTO e: Log-Pwr :>100/100	4.0 ms (3	0000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Lo Marker De
sg Keyzight Sj Aarker 1 0 dB/div 0 0 0 00 10.0 20.0 50.0 0 0 0 0 0 0 0 0 0 0 0 0 0	Ref 10.01	Ω AC 1024368	GHz PNO: Fast 😱	SEN Trig: Free		Avg Typ Avg Hold	ALIGN AUTO e: Log-Pwr :>100/100 Mkr	4.0 ms (3	0000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Lo Marker De Mkr→0
sg Keyzight Sj Aarker 1 0 dB/div 0 0 0 00 10.0 20.0 50.0 0 0 0 0 0 0 0 0 0 0 0 0 0	Ref 10.01	Ω AC 1024368	GHz PNO: Fast 😱	SEN Trig: Free		Avg Typ Avg Hold	ALIGN AUTO e: Log-Pwr :>100/100 Mkr	4.0 ms (3	0000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Lo Marker De Mkr→0
sg Keysight Sj Aarker 1 0 dB/div 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Ref 10.01	Ω AC 1024368	GHz PNO: Fast 😱	SEN Trig: Free		Avg Typ Avg Hold	ALIGN AUTO e: Log-Pwr :>100/100 Mkr	4.0 ms (3	0000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Lo Marker De
SG Keysight Sj Aarker 1 0 dB/div 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Ref 10.01	Ω AC 1024368	GHz PNO: Fast 😱	SEN Trig: Free		Avg Typ Avg Hold	ALIGN AUTO e: Log-Pwr :>100/100 Mkr	4.0 ms (3	0000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Lu Marker De Mkr→C
G dB/div 0 dB/div 0 dB/div 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Ref 10.0	Ω AC 1024368	GHz PNO: Fast 😱	SEN Trig: Free		Avg Typ Avg Hold	ALIGN AUTO e: Log-Pwr :>100/100 Mkr	4.0 ms (3	0000 pts)	Peak Search Next Pe Next Pk Rig Next Pk Lu Marker De Mkr→C Mkr→Ref L
G Keysight Sj Iarker 1 0 dB/div 0 dB/div	Ref 10.0	Ω AC 1024368	CHZ PNO: Fast IFGain:Low	SEN Trig: Free		Avg Typ- Avg Hold	ALIGN AUTO e: Log-Pwr :>100/100 Mkr	4.0 ms (3	0000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Lo Marker De Mkr→0



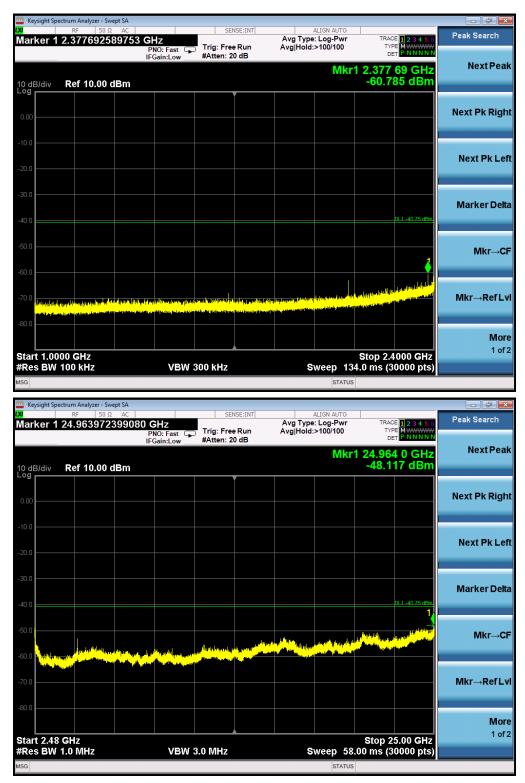
TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11n40 FOR MODULATION IN MIDDLE CHANNEL



TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE

OF 802.11n40 FOR MODULATION IN HIGH CHANNEL

Peak Search	TRACE 123456	ALIGN AUTO		NSE:INT	SEI		2 AC		Keysight Sp
			Avg Hold		Trig: Free #Atten: 2	PNO: Fast 🖵 FGain:Low	F	51.075595	
NextPe	r1 31.88 MHz -64.185 dBm	Mk					dBm	Ref 10.00	dB/div
Next Pk Rig									.00
Next Pk L).0).0
Marker De									0.0
Mkr→	DI 1 -40 75.dBm).0).0
Mkr→Refi									1.0 <mark>1</mark> —
	penned av værde fog i Prosil (næligesta byr) av 19. av av sender fog i penned av ekspildt av akter 1		n stall () a (An (An (An () 19 a - An (An () An () An ()					distance of the second).0 Nicesco).0
M d 1 d	top 1.0000 GHz) ms (30000 pts)	s weep 94.0	s		300 kHz	VBW			art 0.03 Res BW
	0 ms (30000 pts)	weep 94.00	S		300 kHz	VBW		100 kHz	Res BW



Note: The 100kHz RBW used in the conducted spurious test from 2.4835GHz to 25GHz may result in long measuring times, To avoid such long measuring times, the 1MHz RBW can be used for pre-test. If the emission level exceeded the limit at one or more frequencies, the 100kHz RBW would be used for final test at the special frequency.

10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY

10.1 MEASUREMENT PROCEDURE

- (1). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- (2). Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- (3). Set SPA Trace 1 Max hold, then View.

Note: The method of AVPSD in the KDB 558074 item 10.3 was used in this testing.

10.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer To Section 8.2.

10.3 MEASUREMENT EQUIPMENT USED

Refer To Section 6.

10.4 LIMITS AND MEASUREMENT RESULT

TEST ITEM	POWER PECTRAL DENSITY
TEST MODE	802.11b with data rate 1

Channel No.	PSD (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-3.357	8	Pass
Middle Channel	-3.337	8	Pass
High Channel	-2.341	8	Pass

TEST ITEM	POWER PECTRAL DENSITY
TEST MODE	802.11g with data rate 6

Channel No.	PSD (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-9.666	8	Pass
Middle Channel	-9.730	8	Pass
High Channel	-10.415	8	Pass

TEST ITEM	POWER PECTRAL DENSITY
TEST MODE	802.11n 20 with data rate 6.5

Channel No.	PSD (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-11.750	8	Pass
Middle Channel	-10.710	8	Pass
High Channel	-10.855	8	Pass

TEST ITEM	POWER PECTRAL DENSITY
TEST MODE	802.11n 40 with data rate 6.5

Channel No.	PSD (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-13.507	8	Pass
Middle Channel	-14.033	8	Pass
High Channel	-14.432	8	Pass



802.11b TEST RESULT TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL



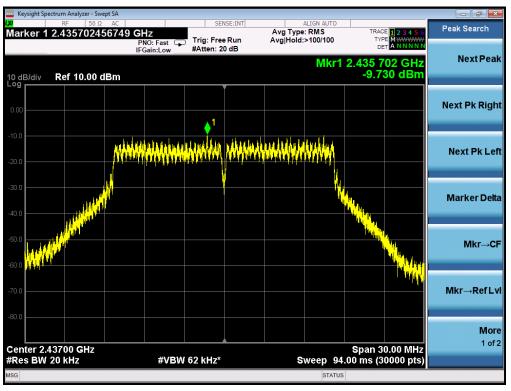


TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

802.11g TEST RESULT

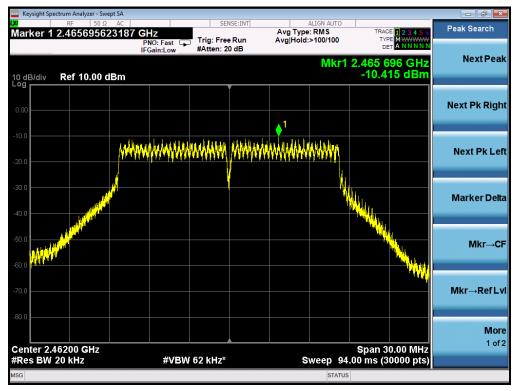
TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

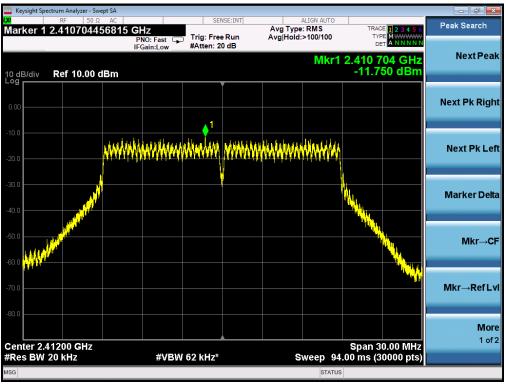




TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

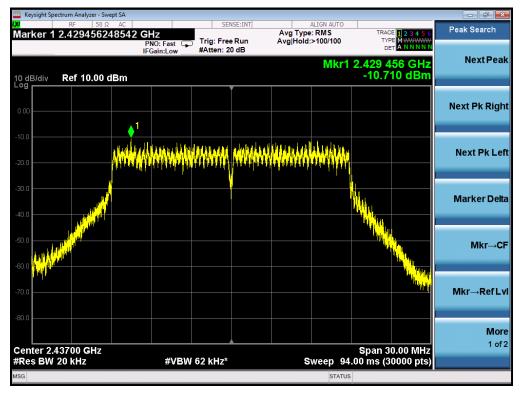
TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL





802.11n 20 TEST RESULT TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

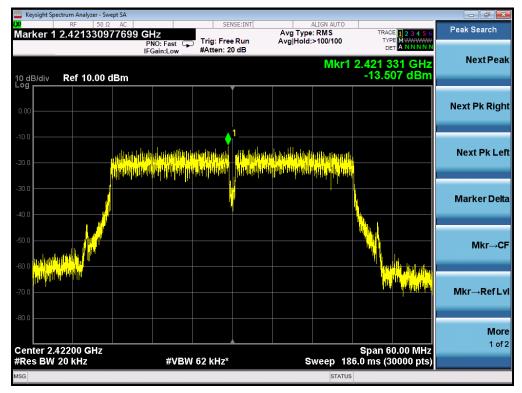


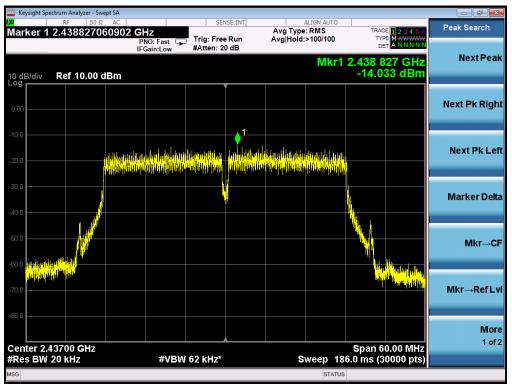


TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

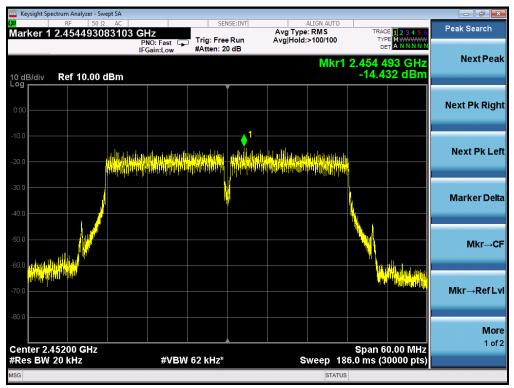
802.11n 40 TEST RESULT

TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL





TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL



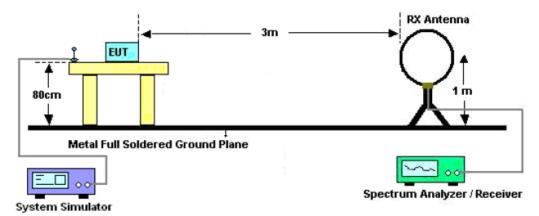
11. RADIATED EMISSION

11.1. MEASUREMENT PROCEDURE

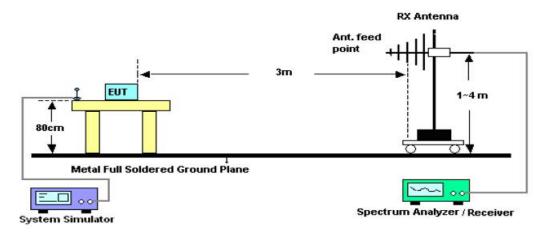
- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8.If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High Low scan is not required in this case.

11.2. TEST SETUP

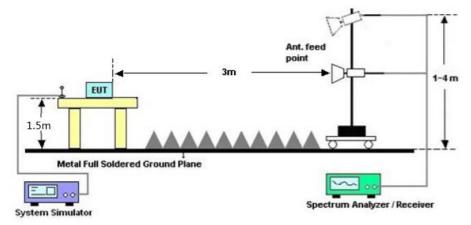
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



11.3. LIMITS AND MEASUREMENT RESULT

15.209(a) Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (micorvolts/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

Note: All modes were tested For restricted band radiated emission,

the test records reported below are the worst result compared to other modes.

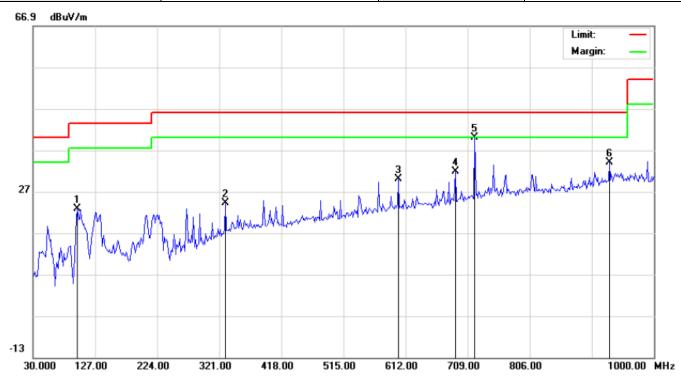
11.4. TEST RESULT

RADIATED EMISSION BELOW 30MHZ

No emission found between lowest internal used/generated frequencies to 30MHz.

RADIATED EMISSION BELOW 1GHZ

EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Horizontal

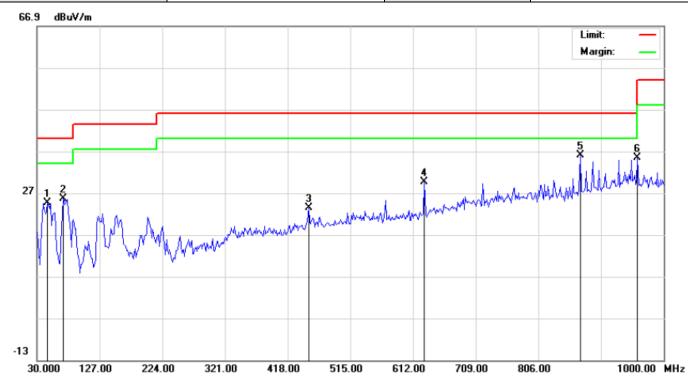


No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height		Comment
	•	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		99.5167	12.81	10.00	22.81	43.50	-20.69	peak			
2		330.7000	6.75	17.45	24.20	46.00	-21.80	peak			
3		600.6833	6.18	23.73	29.91	46.00	-16.09	peak			
4		689.6000	6.88	24.91	31.79	46.00	-14.21	peak			
5	*	720.3167	14.16	25.78	39.94	46.00	-6.06	peak			
6		930.4833	4.58	29.46	34.04	46.00	-11.96	peak			

RESULT: PASS

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EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Vertical



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height		Comment
	•	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		46.1667	16.21	8.49	24.70	40.00	-15.30	peak			
2		70.4167	21.53	4.16	25.69	40.00	-14.31	peak			
3		450.3333	2.91	20.59	23.50	46.00	-22.50	peak			
4		629.7833	6.22	23.40	29.62	46.00	-16.38	peak			
5	*	870.6667	8.16	27.85	36.01	46.00	-9.99	peak			
6		959.5833	5.51	29.91	35.42	46.00	-10.58	peak			

RESULT: PASS

Note:

1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

2. The "Factor" value can be calculated automatically by software of measurement system.

3. All test modes had been pre-tested. The 802.11b at low channel is the worst case and recorded in the report.

RADIATED EMISSION ABOVE 1GHZ

EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type			
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value rype			
4824.060	48.04	3.72	51.76	74	-22.24	peak			
4824.077	43.62	3.72	47.34	54	-6.66	AVG			
7236.092	42.02	8.15	50.17	74	-23.83	peak			
7236.031	36.54	8.15	44.69	54	-9.31	AVG			
Remark:									
Factor = Ante	enna Factor + Ca	able Loss – P	re-amplifier.						

EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4824.118	47.04	3.72	50.76	74	-23.24	peak
4824.026	42.42	3.72	46.14	54	-7.86	AVG
7236.030	41.15	8.15	49.3	74	-24.7	peak
7236.071	35.84	8.15	43.99	54	-10.01	AVG
Remark:						
	enna Factor + Ca	able Loss – I	Pre-amplifier.			

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EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHZ	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value i ype		
4874.062	48.04	3.75	51.79	74	-22.21	peak		
4874.074	44.05	3.75	47.8	54	-6.2	AVG		
7311.101	42.15	8.16	50.31	74	-23.69	peak		
7311.112	35.84	8.16	44	54	-10	AVG		
Remark:								
Factor = Ante	actor = Antenna Factor + Cable Loss – Pre-amplifier.							

EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHZ	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type			
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type			
4874.020	47.35	3.75	51.1	74	-22.9	peak			
4874.091	41.58	3.75	45.33	54	-8.67	AVG			
7311.069	41.27	8.16	49.43	74	-24.57	peak			
7311.045	34.74	8.16	42.9	54	-11.1	AVG			
Remark:									
Factor = Ante	enna Factor + Ca	able Loss – P	re-amplifier.						

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EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHZ	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	3) (dBμV/m) (dBμV/m)		(dB)	value i ype
4924.057	49.05	3.81	52.86	74	-21.14	peak
4924.073	45.33	3.81	49.14	54	-4.86	AVG
7386.106	43.18	8.19	51.37	74	-22.63	peak
7386.063	36.06	8.19	44.25	54	-9.75	AVG
Remark:						
actor = Ante	enna Factor + Ca	able Loss – F	Pre-amplifier.			

EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHZ	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4924.089	48.34	3.81	52.15	74	-21.85	peak
4924.026	44.11	3.81	47.92	54	-6.08	AVG
7386.065	42.42	8.19	50.61	74	-23.39	peak
7386.093	35.56	8.19	43.75	54	-10.25	AVG
Remark:						
-actor = Ante	enna Factor + Ca	able Loss – I	Pre-amplifier.			

RESULT: PASS

Note:

Other emissions from 1G to 25 GHz are considered as ambient noise. No recording in the test report. Factor = Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

All test modes had been pre-tested. The 802.11b mode is the worst case and recorded in the report.

12. BAND EDGE EMISSION

12.1. MEASUREMENT PROCEDURE

Radiated restricted band edge measurements

The radiated restricted band edge measurements are measured with an EMI test receiver connected to the receive antenna while the EUT is transmitting

12.2. TEST SET-UP

same as 11.2

Note:

1. Factor=Antenna Factor + Cable loss - Amplifier gain. Field Strength=Factor + Reading level

2. The factor had been edited in the "Input Correction" of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB(μ V) to represent the Amplitude. Use the F dB(μ V/m) to represent the Field Strength. So A=F.

12.3. TEST RESULT

EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHZ	Antenna	Horizontal





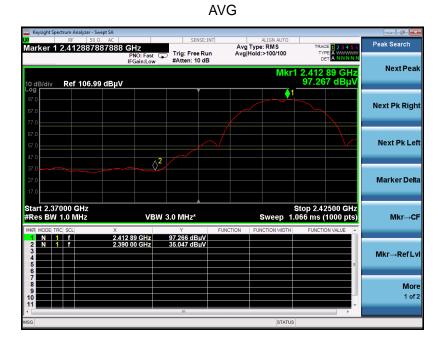
larker 1 2.	RF 50 Ω AC .41305305305	3 GHz PNO: Fast IFGain:Low	SENSE:IN Trig: Free Run #Atten: 10 dB	Avg Ty	ALIGN AUTO ype: RMS Id:>100/100	TYPE	123456 A ******** A NNNNN	Peak Search
0 dB/div	Ref 106.99 dBµ	v			Mkr	2.413 0 99.168		Next Pea
-og 97.0 87.0 77.0								Next Pk Righ
67.0 57.0								Next Pk Le
47.0 37.0 27.0 17.0								Marker Del
tart 2.3700 Res BW 1.	0 MHz		/ 3.0 MHz*	FUNCTION	Sweep 1.	Stop 2.425 066 ms (10	000 pts)	Mkr→C
1 N 1 2 N 1 3 4 5	f 2	.413 05 GHz .390 00 GHz	99.161 dBµV 37.324 dBµV	PONCTION		PONCTION		Mkr→RefL
6								Мо
7								1 of

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EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHZ	Antenna	Vertical







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EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHZ	Antenna	Horizontal





RF 50 Ω AC ker 1 2.461011011011	PNO: Fast	SENSE:INT	Avg Type: F	IGN AUTO		Peak Search
		#Atten: 10 dB	Avg Hold:>		TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A NNNNN	
B/div Ref 106.99 dBµV	1			Mkr1 2	.461 01 GHz 9.505 dBμV	Next Pe
						Next Pk Rig
			2 ²			Next Pk L
						Marker De
rt 2.45000 GHz s BW 1.0 MHz	VBW 3	3.0 MHz*		Sto weep 1.060	p 2.50000 GHz ms (1000 pts)	Mkr→
N 1 f 2.4		99.499 dBµV 39.224 dBµV	FUNCTION FUNCT	ION WIDTH	FUNCTION VALUE	Mkr→Ref
						н Ма 1 а
				STATUS	•	

AVG

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EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHZ	Antenna	Vertical



ΡK

Keysight Spectrum Analyzer - Swept SA					- 0 <u>×</u>
RF 50 Ω AC larker 1 2.460760760761			ALIGN AUTO Type: RMS Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE A WWWWW	Peak Search
0 dB/div Ref 106.99 dBµV	IFGain:Low #Atten: 10			оет <mark>А NNNNN</mark> 1 2.460 76 GHz 97.549 dBµV	Next Peak
og 37.0 77.0					Next Pk Right
57 0			×2		Next Pk Left
77.0 					Marker Delta
tart 2.45000 GHz Res BW 1.0 MHz	VBW 3.0 MHz*	FUNCTION	Sweep 1.	Stop 2.50000 GHz .066 ms (1000 pts)	Mkr→CF
1 N 1 f 2.4i 2 N 1 f 2.4i 3 - - - - 4 - - - - 5 - - - - -	60 76 GHz 97.549 dBı 83 50 GHz 37.023 dBı	IV		=	Mkr→RefLvi
6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7					More 1 of 2
			STATUS	•	

AVG

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EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2412MHZ	Antenna	Horizontal







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EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2412MHZ	Antenna	Vertical







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EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2462MHZ	Antenna	Horizontal







AVG

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EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2462MHZ	Antenna	Vertical



ΡK

Keysight Spec	trum Analyzer - Sv									
Marker 1		2 AC 13213 GHz		SEN	SE:INT	Avg Type Avg Hold	ALIGN AUTO		E 1 2 3 4 5 6 E A WWWW	Peak Search
				#Atten: 10		Avginoid	:>100/100	Di	ANNNN	
10 dB/div	Ref 106.99	9 dBµV					Mkr	1 2.463 87.98	21 GHz 1 dBµV	NextPeak
97.0		1								Next Pk Right
77.0 67.0 57.0				Louis and the second						Next Pk Left
47.0 37.0 27.0						\$ ²		· · · · · · · · · · · · · · · · · · ·		Marker Delta
Start 2.450 #Res BW	1.0 MHz	x	VBW 3.0) MHz*	EUNO		Sweep 1	.066 ms (0000 GHz 1000 pts)	Mkr→CF
1 N 1 2 N 1 3 4 5	f	2.463 21 (2.483 50 (7.937 dBj 5.576 dBj	VL					Mkr→RefLvl
6 7 8 9 10 11										More 1 of 2
MSG				m			STATUS	3	F	

AVG

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EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 20 with data rate 6.5 2412MHZ	Antenna	Horizontal







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EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 20 with data rate 6.5 2412MHZ	Antenna	Vertical



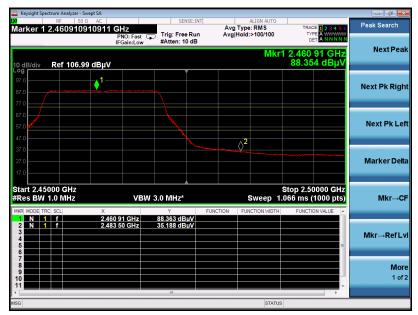


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EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 20with data rate 6.5 2462MHZ	Antenna	Horizontal





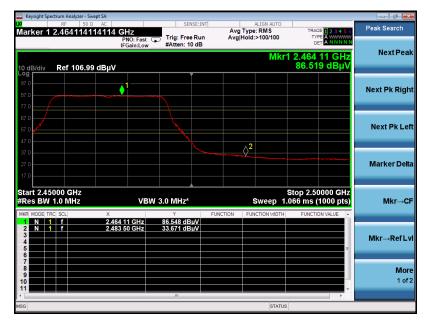


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EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 20 with data rate 6.5 2462MHZ	Antenna	Vertical



AVG



Report No.: AGC05915170612FE04 Page 72 of 90

EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 40 with data rate 6.5 2422MHZ	Antenna	Horizontal







Report No.: AGC05915170612FE04 Page 73 of 90

EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 40 with data rate 6.5 2422MHZ	Antenna	Vertical



larker 1	RF 50 2.425630	Ω AC 630631 GHz PNO: Fa IFGain:Lo		Avg	ALIGN AUTO g Type: RMS Hold:>100/100	TRACE 123456 TYPE A WWWWW DET A NNNNN	Peak Search
0 dB/div	Ref 106.9	99 dBµV			Mkr	1 2.425 63 GHz 82.942 dBμV	NextPea
. og 97.0 87.0					1		Next Pk Rig
77.0 57.0 57.0							Next Pk Le
47.0 37.0 27.0 17.0		2 2					Marker De
tart 2.37 Res BW		v	'BW 3.0 MHz*		Sweep 1.	Stop 2.44500 GHz 066 ms (1000 pts)	Mkr→(
1 N 1 2 N 1 3	f	× 2.425 63 GHz 2.390 00 GHz	γ z 82.978 dBμV z 38.362 dBμV	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	
4 5 6						E	Mkr→RefL
7 8 9							M C 1 c

Report No.: AGC05915170612FE04 Page 74 of 90

EUT	Roav DashCam C1 Pro	Model Name	R2120
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 40with data rate 6.5 2452MHZ	Antenna	Horizontal



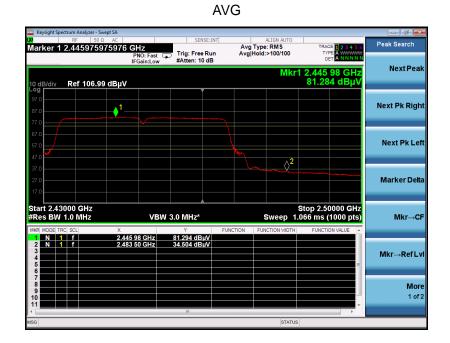
arker 1		^{50 Ω} AC 4244244 G	Hz PNO: Fast FGain:Low			Avg Typ Avg Hol	ALIGN AUTO be: RMS d:>100/100	TYP	E 1 2 3 4 5 6 E A WWWW T A N N N N N	Peak Search
) dB/div	Ref 106	.99 dBµV					Mkr	1 2.454 83.37	24 GHz 8 dBµV	Next Pe
og 17.0 17.0			1							Next Pk Rig
77.0 57.0 57.0										Next Pk Lo
17.0 37.0 27.0							\$ ²			Marker De
	000 GHz 1.0 MHz		VBV	N 3.0 MHz*			Sweep 1.	Stop 2.50 066 ms (′	000 GHz 1000 pts)	Mkr⊸
	RC SCL	× 2.454 2.483	24 GHz 50 GHz	۲ 83.391 dBµ 35.209 dBµ	V	CTION FU	UNCTION WIDTH	FUNCTIO	IN VALUE	
3 4 5 6		2.400							E	Mkr→Refl
7 8 9										Mo
0										1 0

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EUT	Roav DashCam C1 Pro	Model Name	R2120	
Temperature	25°C	Relative Humidity	55.4%	
Pressure	960hPa	Test Voltage	Normal Voltage	
Test Mode	802.11n 40 with data rate 6.5 2452MHZ	Antenna	Vertical	

ΡK





RESULT: PASS

13. FCC LINE CONDUCTED EMISSION TEST

13.1. LIMITS OF LINE CONDUCTED EMISSION TEST

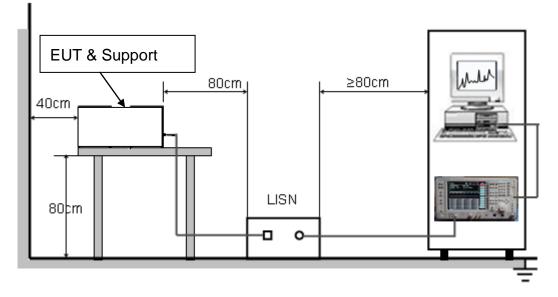
Frequency	Maximum RF Line Voltage							
Frequency	Q.P.(dBuV)	Average(dBuV)						
150kHz~500kHz	66-56	56-46						
500kHz~5MHz	56	46						
5MHz~30MHz	60	50						

Note:

1. The lower limit shall apply at the transition frequency.

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

13.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



13.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

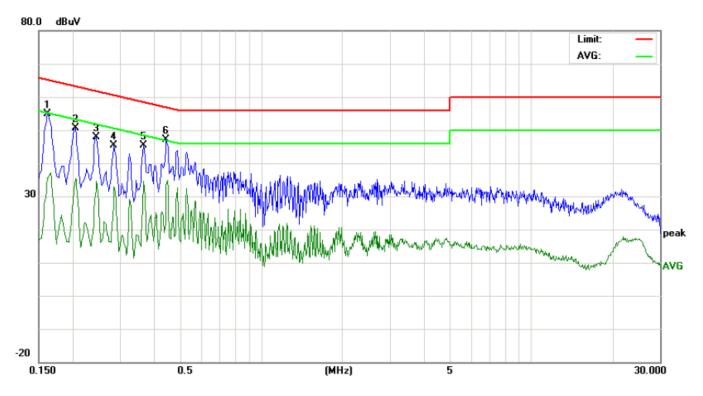
- The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2. Support equipment, if needed, was placed as per ANSI C63.10.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4. All support equipments received AC120V/60Hz power from a LISN, if any.
- 5. The EUT received 120V/60Hzpower by a LISN..
- 6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.
- 9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

13.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 3. The test data of the worst case condition(s) was reported on the Summary Data page.

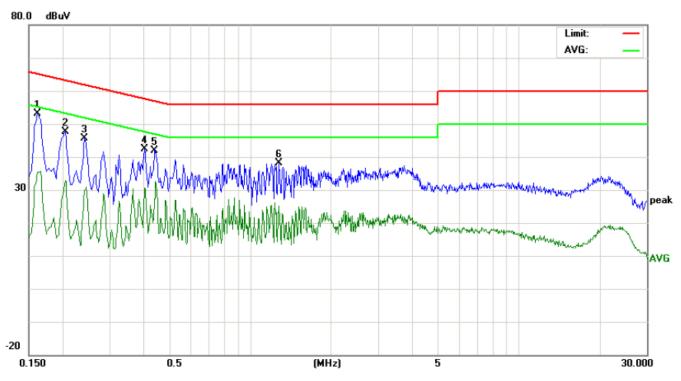
13.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST



Line Conducted Emission Test Line 1-L

	Freq.				Correct Factor		Measurement (dBuV)			Limit (dBuV)		Margin (dB)		Comment
	(MHz)	Peak	QP	AVG	dB	Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1620	44.67		25.35	10.17	54.84		35.52	65.36	55.36	-10.52	-19.84	Ρ	
2	0.2060	40.31		25.19	10.22	50.53		35.41	63.36	53.36	-12.83	-17.95	Р	
3	0.2460	37.55		24.37	10.27	47.82		34.64	61.89	51.89	-14.07	-17.25	Ρ	
4	0.2860	35.16		22.72	10.28	45.44		33.00	60.64	50.64	-15.20	-17.64	Р	
5	0.3660	35.09		24.41	10.32	45.41		34.73	58.59	48.59	-13.18	-13.86	Р	
6	0.4460	36.66		23.23	10.36	47.02		33.59	56.95	46.95	-9.93	-13.36	Ρ	

RESULT: PASS



Line Conducted Emission Test Line 2-N

No.	Freq. (MHz)	Reading_Level (dBuV)		Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment	
		Peak	QP	AVG	dB	Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1620	42.90		25.09	10.17	53.07		35.26	65.36	55.36	-12.29	-20.10	Ρ	
2	0.2060	37.50		22.68	10.22	47.72		32.90	63.36	53.36	-15.64	-20.46	Ρ	
3	0.2420	35.43		19.51	10.26	45.69		29.77	62.02	52.02	-16.33	-22.25	Р	
4	0.4060	31.96		20.22	10.33	42.29		30.55	57.73	47.73	-15.44	-17.18	Р	
5	0.4420	31.57		16.99	10.36	41.93		27.35	57.02	47.02	-15.09	-19.67	Р	
6	1.2860	27.67		13.60	10.38	38.05		23.98	56.00	46.00	-17.95	-22.02	Р	

RESULT: PASS