

# **TEST REPORT**

## FCC PART 15 SUBPART C 15.247

# Test report On Behalf of XIAMENSHI C-CHIP TECHNOLOGY CO., LTD. For WIFI BLE Module

## Model No.: C-8133U

## FCC ID: 2AR7VC-8133U

Prepared for : XIAMENSHI C-CHIP TECHNOLOGY CO., LTD. 1001C, 166 tapu east Road, Siming District, Xiamen, china

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 Date of Test:
 Jan. 10, 2019 ~ Jan. 16, 2019

 Date of Report:
 Jan. 16, 2019

 Report Number:
 HK1901170154E



#### **TEST RESULT CERTIFICATION**

Applicant's name:	XIAMENSHI C-CHIP TECHNOLOGY CO., LTD.
Address:	1001C, 166 tapu east Road, Siming District, Xiamen, china
Manufacture's Name	XIAMENSHI C-CHIP TECHNOLOGY CO., LTD.
Address:	1001C, 166 tapu east Road, Siming District, Xiamen, china
Factory's Name:	XIAMENSHI C-CHIP TECHNOLOGY CO., LTD.
Address:	1001C, 166 tapu east Road, Siming District, Xiamen, china
Product description	
Trade Mark:	C-CHIP
Product name:	WIFI BLE Module
Model and/or type reference:	C-8133U
Standards	47 CFR FCC Part 15 Subpart C 15.247

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Date of Test	
Date (s) of performance of tests	Jan. 10, 2019 ~ Jan. 16, 2019
Date of Issue	Jan. 16, 2019
Test Result	Pass

:

5

**Testing Engineer** 

Good Gim (Gary Qian) Edan Mu (Eden Hu)

**Technical Manager** 

Authorized Signatory :

(Jason Zhou)



## TABLE OF CONTENTS

1.SUMMARY	5
1.1 TEST STANDARDS	5
1.2 TEST DESCRIPTION	5
1.3 TEST FACILITY	6
1.4 STATEMENT OF THE MEASUREMENT UNCERTAINTY	6
2.GENERAL INFORMATION	7
2.1 ENVIRONMENTAL CONDITIONS	7
2.2 GENERAL DESCRIPTION OF EUT	7
2.3 DESCRIPTION OF TEST MODES AND TEST FREQUENCY	7
2.4 RELATED SUBMITTAL(S) / GRANT (S)	
2.5 MODIFICATIONS	
2.6. IEEE 802.11N MODULATION SCHEME	
2.7 EQUIPMENT USED	-
3. OUTPUT POWER	11
3.1. MEASUREMENT PROCEDURE	11
3.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	11
3.3. LIMITS AND MEASUREMENT RESULT	
4. 6 DB BANDWIDTH	14
4.1. MEASUREMENT PROCEDURE	14
4.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	
4.3. LIMITS AND MEASUREMENT RESULTS	15
5. CONDUCTED SPURIOUS EMISSION	23
5.1. MEASUREMENT PROCEDURE	
5.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	
5.3. LIMITS AND MEASUREMENT RESULT	23
6. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY	
6.1 MEASUREMENT PROCEDURE	
6.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	
6.3 LIMITS AND MEASUREMENT RESULT	
7. RADIATED EMISSION	



7.1. MEASUREMENT PROCEDURE	
7.2. TEST SETUP	51
7.3. LIMITS AND MEASUREMENT RESULT	
7.4. TEST RESULT	
8. BAND EDGE EMISSION	58
8.1. MEASUREMENT PROCEDURE	
8.2. TEST SET-UP	
8.3. TEST RESULT	59
9. LINE CONDUCTED EMISSION TEST	75
9.1. LIMITS OF LINE CONDUCTED EMISSION TEST	75
9.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST	75
9.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST	76
9.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST	76
9.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST	77
APPENDIX A: PHOTOGRAPHS OF TEST SETUP	79
APPENDIX B: PHOTOGRAPHS OF EUT	04



#### **1.SUMMARY**

#### **1.1 TEST STANDARDS**

The tests were performed according to following standards:

FCC Rules Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

KDB 558074 D01 15.247 Meas Guidance v05: Guidance for compliance measurements on Digital transmission system, frequency hopping spread spectrum system, and hybrid system devices operating under section 15.247 of the FCC rules

ANSI C63.10:2013 : American National Standard for Testing Unlicensed Wireless Devices

#### **1.2 TEST DESCRIPTION**

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	Line Conduction Emission	Compliant



#### **1.3 TEST FACILITY**

1.3.1 Address of the test laboratory

Shenzhen HUAK Testing Technology Co., Ltd.

Add.:1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.4 and CISPR 32/EN 55032 requirements.

#### 1.3.2 Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

#### IC Registration No.: 21210

The 3m alternate test site of Shenzhen HUAK Testing Technology Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration No.: 21210 on May 24, 2016.

#### FCC Registration No.: CN1229

Test Firm Registration Number : 616276

#### **1.4 STATEMENT OF THE MEASUREMENT UNCERTAINTY**

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the Shenzhen HUAK Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for HUAK laboratory is reported:

Test	Measurement Uncertainty	Notes	
Transmitter power conducted	±0.57 dB	(1)	
Transmitter power Radiated	±2.20 dB	(1)	
Conducted spurious emission 9KHz-40 GHz	±2.20 dB	(1)	
Occupied Bandwidth	±0.01ppm	(1)	
Radiated Emission 30~1000MHz	±4.10dB	(1)	
Radiated Emission Above 1GHz	±4.32dB	(1)	
Conducted Disturbance0.15~30MHz	±3.20dB	(1)	

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95%

confidence level using a coverage factor of k=2.



## 2.GENERAL INFORMATION

#### 2.1 ENVIRONMENTAL CONDITIONS

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

#### 2.2 GENERAL DESCRIPTION OF EUT

Product Name:	WIFI BLE Module
Model/Type reference:	C-8133U
Power supply:	DC 3.3V
Modulation	DSSS(DBPSK/DQPSK/CCK);OFDM(BPSK/QPSK/16-QAM/64-QAM)
Supported modes	802.11 b/g/n20/n40
Operation Frequency	2.412 GHz~2.462GHz
Channel number:	11
Antenna type:	PCB Antenna
Antenna gain:	0dBi
Hardware Version:	V1.1
Software Version:	V1.1

Note: For more details, refer to the user's manual of the EUT.

#### 2.3 DESCRIPTION OF TEST MODES AND TEST FREQUENCY

Frequency Band	Channel Number	Frequency
	1	2412 MHZ
	2	2417 MHZ
	3	2422 MHZ
	4	2427 MHZ
2400~2483.5MHZ	5	2432 MHZ
	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



NO.	TEST MODE DESCRIPTION					
1	Low channel TX					
2	Middle channel TX					
3	High channel TX					
4	Normal operating					
Note:	Note:					
Transm	Transmit by 802.11b with Date rate (1/2/5.5/11)					
Transm	Transmit by 802.11g with Date rate (6/9/12/18/24/36/48/54)					
Transm	Transmit by 802.11n (20MHz) with Date rate (6.5/13/19.5/26/39/52/58.5/65)					
Transm	Fransmit 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.
- 4 For Conducted Test method, a temporary antenna connector is provided by the manufacture.

Configure :



Item	Equipment	oment Model No. Specification		Remark	
1	Dell PC	Ins 14-7460-D1525S	N/A	Provided by test lab	
2	PC adapter	PC adapter YH-195-462		Provided by test lab	
3	Control board BK_Download_UART_V1.0		N/A	Provided by test lab	

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

This submittal(s) (test report) is intended to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

#### 2.5 MODIFICATIONS

No modifications were implemented to meet testing criteria.



## 2.6. IEEE 802.11N MODULATION SCHEME

MCS	Nss	Modulation	R	NBPSC	NC	BPS	NDBPS			ata Abps) asGl
Index					20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
0	1	BPSK	1/2	1	52	108	26	54	6.5	13.5
0	1	DI GI	1/2	1	52	100	20	54	0.5	10.0
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

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	



#### 2.7 EQUIPMENT USED

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	R&S	ENV216	HKE-002	Dec. 27, 2018	1 Year
2.	Receiver	R&S	ESCI 7	HKE-010	Dec. 27, 2018	1 Year
3.	RF automatic control unit	Tonscend	JS0806-2	HKE-060	Dec. 27, 2018	1 Year
4.	Horn Antenna	Schewarzbeck	BBHA 9170	HKE-090	Dec. 27, 2018	1 Year
5.	Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 27, 2018	1 Year
6.	Preamplifier	Schwarzbeck	BBV 9743	HKE-006	Dec. 27, 2018	1 Year
7.	EMI Test Receiver	Rohde & Schwarz	ESCI 7	HKE-010	Dec. 27, 2018	1 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	HKE-012	Dec. 27, 2018	1 Year
9.	Loop Antenna	Schwarzbeck	FMZB 1519 B	HKE-014	Dec. 27, 2018	1 Year
10.	Horn Antenna	Schewarzbeck	9120D	HKE-013	Dec. 27, 2018	1 Year
11.	Pre-amplifier	EMCI	EMC051845 SE	HKE-015	Dec. 27, 2018	1 Year
12.	Pre-amplifier	Agilent	83051A	HKE-016	Dec. 27, 2018	1 Year
13.	EMI Test Software EZ-EMC	Tonscend	JC-8133U12 0-B Version	HKE-083	Dec. 27, 2018	N/A
14.	Power Sensor	Agilent	E9300A	HKE-086	Dec. 27, 2018	1 Year
15.	Shielded room	Shiel Hong	4*3*3	HKE-039	Dec. 27, 2018	3 Year

The calibration interval was one year.



## 3. OUTPUT POWER

#### **3.1. MEASUREMENT PROCEDURE**

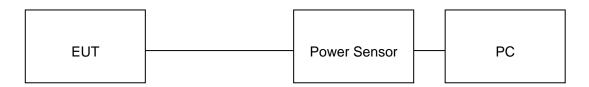
For average power test:

- 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 ANSI C63.10 (2013) for compliance to FCC 47CFR 15.247 requirements.

## 3.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

#### AVERAGE POWER SETUP





## 3.3. 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	16.34	30	Pass
2.437	16.12	30	Pass
2.462	16.49	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	14.47	30	Pass
2.437	14.14	30	Pass
2.462	14.03	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	12.16	30	Pass
2.437	12.94	30	Pass
2.462	12.68	30	Pass



TEST ITEM	OUTPUT POWER
TEST MODE	802.11n 40 with data rate 13.5

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.422	12.76	30	Pass
2.437	12.19	30	Pass
2.452	12.35	30	Pass



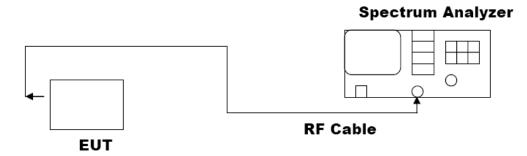
## 4.6 DB BANDWIDTH

#### 4.1. 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 ANSI C63.10 (2013) for compliance to FCC 47CFR 15.247 requirements.

## 4.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)





## 4.3. LIMITS AND MEASUREMENT RESULTS

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

LIMITS AND MEASUREMENT RESULT				
Applicable Limits				
Applicable Limits	Test Data (MHz) Criteria			
	Low Channel	9.059	PASS	
>500KHZ	Middle Channel	8.579	PASS	
	High Channel	9.057	PASS	

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

LIMITS AND MEASUREMENT RESULT							
Applicable Limite		Applicable Limits					
Applicable Limits	Test Da	Criteria					
	Low Channel	15.45	PASS				
>500KHZ	Middle Channel	15.42	PASS				
	High Channel	15.12	PASS				

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

LIMITS AND MEASUREMENT RESULT								
Applicable Limite		Applicable Limits						
Applicable Limits	Test Da	Criteria						
	Low Channel	15.68	PASS					
>500KHZ	Middle Channel	15.67	PASS					
	High Channel	15.44	PASS					



TEST ITEM	6DB BANDWIDTH
TEST MODE	802.11n 40 with data rate 135

LIMITS AND MEASUREMENT RESULT							
Applicable Limite		Applicable Limits					
Applicable Limits	Test Da	Criteria					
	Low Channel	35.70	PASS				
>500KHZ	Middle Channel	35.64	PASS				
	High Channel	35.69	PASS				



-					
Keysight Spectrum Analyzer - Occupied BW		SENSE:INT	ALIGN AUTO		
Center Freq 2.41200000		nter Freq: 2.412000000 GHz	Radio	o Std: None	Frequency
		g: Free Run Avg Ho tten: 20 dB	old:>10/10 Radio	Device: BTS	
			Mkr1 2	41149 GHz	
10 dB/div Ref 20.00 dBn	ı		2	.5356 dBm	
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-60.0					
-70.0					
Center 2.412 GHz				Span 30 MHz	
#Res BW 100 kHz		#VBW 300 kHz		ep 3.733 ms	CF Ste
• • • • • • • • •		Total Power	18.6 dBn		3.000000 MH Auto Ma
Occupied Bandwidt		Total Power	10.0 UBI		
14	.367 MHz				Freq Offse
Transmit Freq Error	53.637 kHz	% of OBW Poy	wer 99.00 %	0	0 H
x dB Bandwidth	9.059 MHz	x dB	-6.00 dE	3	
MSG			STATUS		

#### 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 MIDDLE CHANNEL

TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL





## 802.11n (20) TEST RESULT

#### Keysight Spectrum Analyzer - Occupied BW SENSE:INT ALIGN AUTO Center Freq: 2.412000000 GHz Trig: Free Run Avg|Hold:>10/10 #Atten: 30 dB Frequency Center Freg 2.412000000 GHz Radio Std: None #IFGain:Low Radio Device: BTS Mkr1 2.4132 GHz -2.7507 dBm Ref 10.00 dBm 10 dB/div \_og **Center Freq** 2.412000000 GHz Span 30 MHz Sweep 3.733 ms Center 2.412 GHz #Res BW 100 kHz CF Step 3.000000 MHz #VBW 300 kHz Man 15.1 dBm Auto **Total Power Occupied Bandwidth** 17.463 MHz **Freq Offset** 9.446 kHz **Transmit Freq Error** % of OBW Power 99.00 % 0 Hz x dB Bandwidth 15.68 MHz x dB -6.00 dB MSG STATUS

#### 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





## 5. CONDUCTED SPURIOUS EMISSION

#### 5.1. 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 ANSI C63.10 (2013) 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.

#### 5.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 4.2.

#### 5.3. LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT								
Angliaghta Linsita	Measurement Result							
Applicable Limits	Test Data	Criteria						
In any 100 KHz Bandwidth Outside the	At least -30dBc 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 30 dB below that in 100KHz								
bandwidth within the band that contains the highest								
level of the desired power.	At least -30dBc than the limit	PASS						
In addition, radiation emissions which fall in the	Specified on the TOP Channel	1700						
restricted bands, as defined in §15.205(a), must also								
comply with the radiated emission limits specified								
in§15.209(a))								



Keysight Sp	ectrum Analyzer -									
larker ′	<sup>RF</sup> 50 1 975.2643		<b>IZ</b> PNO: Fast ♀ FGain:Low	Trig: Free F Atten: 30 c	Run	Avg Type Avg Hold:		TRAC TY D	CE 1 2 3 4 5 6 PE MWWWW ET P N N N N	Peak Search
			Guinicow				Mkr		264 MHz 95 dBm	Next Pea
odB/div <sup>og</sup>	Ref 20.0	0 dBm		Ţ				-09.0	95 UBIII	
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).00										Next Dicks
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0.0									DL1 -17.54 dBm	
										Marker De
0.0										
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D.O								1	<b>↓</b> 1	
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0.0										
								Stop 1	0000 GHz	<b>Mo</b> 1 o
	300 GHz									
Res BW	300 GHz / 100 kHz		#VBW	300 kHz		S		33 ms (4	0000 GH2 0000 pts)	
Res BW	300 GHZ / 100 kHz		#VBW	300 kHz		S	weep 93. STATUS	33 ms (4	10000 pts)	
Res BW	ectrum Analyzer - 5	Ω AC		300 kHz	E:INT			33 ms (4	10000 pts)	
R <b>es BW</b> G Keysight Sp	ectrum Analyzer -	936123 G	Hz PNO: Fast 😱	SENSI	Run		STATUS	33 ms (4	10000 pts)	
R <b>es BW</b> 3 Keysight Sp	ectrum Analyzer - 5	936123 G	GHz	SENS	Run	Avg Type	STATUS LIGN AUTO : Log-Pwr >100/100	33 ms (4	CE 123456 PE MWWWWW FT P NNNN 45 GHz	Peak Search
Res BW Reysight Sp arker *	ectrum Analyzer - 5	ΩΩ AC 1936123 C	Hz PNO: Fast 😱	SENSI	Run	Avg Type	STATUS LIGN AUTO : Log-Pwr >100/100	33 ms (4	CE 1 2 3 4 5 6 PE MWWWW ET P N N N N	Peak Search
Res BW a Keysight Sp arker '	/ 100 kHz pectrum Analyzer - RF 51 1 2.397444	ΩΩ AC 1936123 C	Hz PNO: Fast 😱	SENSI	Run	Avg Type	STATUS LIGN AUTO : Log-Pwr >100/100	33 ms (4	CE 123456 PE MWWWWW FT P NNNN 45 GHz	Peak Search Next Pe
Res BW Reysight Sp arker '	/ 100 kHz pectrum Analyzer - RF 51 1 2.397444	ΩΩ AC 1936123 C	Hz PNO: Fast 😱	SENSI	Run	Avg Type	STATUS LIGN AUTO : Log-Pwr >100/100	33 ms (4	CE 123456 PE MWWWWW FT P NNNN 45 GHz	Peak Search Next Pea
Res BW	/ 100 kHz pectrum Analyzer - RF 51 1 2.397444	ΩΩ AC 1936123 C	Hz PNO: Fast 😱	SENSI	Run	Avg Type	STATUS LIGN AUTO : Log-Pwr >100/100	33 ms (4	CE 123456 PE MWWWWW FT P NNNN 45 GHz	Peak Search Next Pea
Res BW s Keysight Sp arker ' dB/div 9 0.0	/ 100 kHz pectrum Analyzer - RF 51 1 2.397444	ΩΩ AC 1936123 C	Hz PNO: Fast 😱	SENSI	Run	Avg Type	STATUS LIGN AUTO : Log-Pwr >100/100	33 ms (4	CE 123456 PE MWWWWW FT P NNNN 45 GHz	Peak Search Next Pea Next Pk Rig
Res BW Keysight Sp arker ' 0 dB/div 9 0.0 0.0 0.0	/ 100 kHz pectrum Analyzer - RF 51 1 2.397444	ΩΩ AC 1936123 C	Hz PNO: Fast 😱	SENSI	Run	Avg Type	STATUS LIGN AUTO : Log-Pwr >100/100	33 ms (4	CE 123456 PE MWWWWW FT P NNNN 45 GHz	Peak Search Next Pea Next Pk Rig
Res BW G Keysight Sp arker ' 0 dB/div S 0.0 0.0 0.0 0.0 0.0	/ 100 kHz pectrum Analyzer - RF 51 1 2.397444	ΩΩ AC 1936123 C	Hz PNO: Fast 😱	SENSI	Run	Avg Type	STATUS LIGN AUTO : Log-Pwr >100/100	33 ms (4	CE 123456 E 123456 E MWWWWW 145 GHz 63 dBm	Peak Search Next Pea Next Pk Rig Next Pk Le
Res BW G Keysight Sp arker ' 0 dB/div 9 0.0 0.0 0.0 0.0	/ 100 kHz pectrum Analyzer - RF 51 1 2.397444	ΩΩ AC 1936123 C	Hz PNO: Fast 😱	SENSI	Run	Avg Type	STATUS LIGN AUTO : Log-Pwr >100/100	33 ms (4	CE 123456 E 123456 E MWWWWW 145 GHz 63 dBm	Peak Search Next Pea Next Pk Rig
Res BW G Keysight Sp arker ' 0 dB/div S 0.0 0.0 0.0 0.0 0.0	/ 100 kHz pectrum Analyzer - RF 51 1 2.397444	ΩΩ AC 1936123 C	Hz PNO: Fast 😱	SENSI	Run	Avg Type	STATUS LIGN AUTO : Log-Pwr >100/100	33 ms (4	CE 123456 E 123456 E MWWWWW 145 GHz 63 dBm	Peak Search Next Pea Next Pk Rig Next Pk Lo Marker De
Res BW Reysight Sp arker ' arker ' arker ' arker ' arker ' arker ' arker ' arker ' arker '	/ 100 kHz pectrum Analyzer - RF 51 1 2.397444	ΩΩ AC 1936123 C	Hz PNO: Fast 😱	SENSI	Run	Avg Type	STATUS LIGN AUTO : Log-Pwr >100/100	33 ms (4	CE 123456 E 123456 E MWWWWW 145 GHz 63 dBm	Peak Search Next Pea Next Pk Rig Next Pk Lo Marker De
Res BW keysight Sp arker / arker /	rectrum Analyzer - RE 51 1 2.397444 Ref 20.01	0 dBm	EHz PPO: Fast FGain:Low	SENSI Trig: Free F Atten: 30 c	Run IB	Avg Type Avg Hold:	STATUS	33 ms (4	CE 123456 E 123456 E MWWWWW 145 GHz 63 dBm	Peak Search Next Pea Next Pk Rig Next Pk Lo Marker De
Res BW G Keysight Sp arker ' 0 dB/div 0 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	rectrum Analyzer - RE 51 1 2.397444 Ref 20.01	0 dBm	Hz PNO: Fast 😱	SENSI Trig: Free F Atten: 30 c	Run IB	Avg Type Avg Hold:	STATUS	33 ms (4	CE 123456 E 123456 E MWWWWW 145 GHz 63 dBm	Peak Search Next Pea Next Pk Rig Next Pk Le Marker De
Res BW G Keysight Sp arker ' 0 dB/div 0 d 0 0 0 0 0 0 0 0 0 0 0 0 0 0	rectrum Analyzer - RE 51 1 2.397444 Ref 20.01	0 dBm	EHz PRO: Fast FGain:Low	SENSI Trig: Free F Atten: 30 c	Run IB	Avg Type Avg Hold:	STATUS	33 ms (4	CE 123456 E 123456 E MWWWWW 145 GHz 63 dBm	Peak Search Next Pea Next Pk Rig Next Pk Le Marker De
Res BW Reysight Sp arker / arker /	( 100 kHz rectrum Analyzer - 5 RE 5 1 2.397444 Ref 20.00 	0 dBm	EHz PRO: Fast FGain:Low	SENSI Trig: Free F Atten: 30 c	Run IB	Avg Type Avg Hold:	STATUS	33 ms (4	22 1 2 3 4 5 6 P MININ 445 GHz 63 dBm DL1 -17.54 dbm	Peak Search Next Pea Next Pk Rig Next Pk Le Marker De Mkr→Ref L
Res BW Reysight Sp arker / arker /	rectrum Analyzer - RE 51 1 2.397444 Ref 20.01	0 dBm	EHz PNO: Fast FGain:Low	SENSI Trig: Free F Atten: 30 c	Run IB		STATUS	33 ms (4	CE 123456 E 123456 E MWWWWW 145 GHz 63 dBm	

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

Page 24 of 85



								um Analyzer - Swe	Keysight Spe
Peak Search	TRACE 1 2 3 4 5 6	ALIGN AUTO E: Log-Pwr	Avg Ty	NSE:INT	SEI	iHz		RF 50 Ω .82414869	<mark>«</mark> Marker 1
	DET P N N N N	:>100/100	Avg Ho		Trig: Fre Atten: 30	PNO: Fast 🖵 FGain:Low			
Next Peal	1 4.824 1 GHz -39.493 dBm	Mkr					Bm	Ref 20.00 c	I0 dB/div
				Y				Kei 20.00 t	
Next Pk Righ									10.0
									0.00
Next Pk Lei									
									10.0
	DL1 -17.54 dBm								20.0
Marker Delt									
								<b>1</b>	30.0
								<u> </u>	40.0
Mkr→C									
		المتلافل وامل المعان							50.0
Mkr→RefLv	and the second	nin fantifika ika úter fil	al distance in the second s		de della line parles a	an <mark>the shires a state</mark>			-60.0
					All and a second se	اللارب واختلالا والأأتر	and a strength of the second	ALA.	70.0
									70.0
Mon 1 of:	Stop 25.00 GHz							Hz	Start 2.48
1 01	152 s (40000 pts)	Sweep 2			300 kHz	#VBW			Res BW
		STATUS							1SG

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

								ctrum Analyzer - S	Keysight Sp
Peak Search	TRACE <b>1 2 3 4 5 6</b> TYPE <b>M</b> DET <b>P N N N N</b>	wr	ALIGN AUTO pe: Log-Pw d:>100/100	Avg Ty Avg Hol		Hz PNO: Fast ⊂	Ω AC 10868 N	RF 50 348.4347	arker 1
NextPea	8.435 MHz 8.833 dBm	Mkr1 34 -5	Μ				dBm	Ref 20.00	) dB/div
Next Pk Rig									10.0
Next Pk Le	DL1 -16.23 dBm								0.00
Marker Del									80.0
Mkr→C									io.o
Mkr→RefL					a ti filos fora de filos de serve de				
<b>Mo</b> 1 of	p 1.0000 GHz	Sto						00 GHz	tart 0.03
	is (40000 pts)	93.33 m			/ 300 kHz	#VBW		100 kHz	Res BW



	ctrum Analyzer - Swept SA								
w Marker 1	RF 50 Ω AC 2.38844971124			ISE:INT	Avg Type	ALIGN AUTO : Log-Pwr	TRAC	E <b>1 2 3 4 5 6</b>	Peak Search
		PNO: Fast	Trig: Free Atten: 30		Avg Hold	:>100/100	TYP		
		il ounicon				Mkr1	2.388 4	50 GHz	Next Peak
10 dB/div	Ref 20.00 dBm						-57.3	88 dBm	
10.0									Next Pk Right
0.00									
-10.0									Next Pk Left
- 10.0								DL1 -16.23 dBm	
-20.0									
									Marker Delta
-30.0									
-40.0									
-40.0									Mkr→CF
-50.0									
-60.0	to the part of the property of the second second	And the local second sector of the	uprate <mark>htter</mark> tere pr	nille (setting		hippinera per filitaria	un Mari dalam		Mkr→RefLvl
-70.0	and the second	an a	te je poste providence a state e a	اندر هانسه م <sub>ا</sub> سر <sub>ا</sub> یا جام	فأغلا واللطار وعريما كالتربيط المتلا	a hay put, or other data to be the			
-70.0									
							<u> </u>		More
Start 1.00 #Res BW		#VBW	300 kHz		9	weep 13	500 2.4 6.0 ms (4	1000 GHz 0000 pts)	1 of 2
MSG						STATUS			
-									
Keysight Spec	ctrum Analyzer - Swept SA RF 50 Ω AC		SEN	SE:INT		ALIGN AUTO			
L <mark>XI</mark>		56 GHz			Avg Type	e: Log-Pwr	TRAC	E 1 2 3 4 5 6 E M WWWWW	Peak Search
L <mark>XI</mark>	RF 50 Ω AC			Run	Avg Type	e: Log-Pwr :>100/100	TYF DE		Peak Search
Marker 1	RF 50 Ω AC 4.87368622965	56 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	TYF DE	37 GHz	
L <mark>XI</mark>	RF 50 Ω AC	56 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	TYF DE		Peak Search
Marker 1	RF 50 Ω AC 4.87368622965	56 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	TYF DE	37 GHz	Peak Search Next Peak
Marker 1	RF 50 Ω AC 4.87368622965	56 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	TYF DE	37 GHz	Peak Search
Marker 1	RF 50 Ω AC 4.87368622965	56 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	TYF DE	37 GHz	Peak Search Next Peak
Marker 1	RF 50 Ω AC 4.87368622965	56 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	TYF DE	37 GHz	Peak Search Next Peak Next Pk Right
Marker 1	RF 50 Ω AC 4.87368622965	56 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	TYF DE	37 GHz	Peak Search Next Peak Next Pk Right
10 dB/div 10.0 0.00 0.00 0.00 0.00 0.00 0.00 0.00	RF 50 Ω AC 4.87368622965	56 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	TYF DE	37 GHz	Peak Search Next Peak Next Pk Right
Marker 1 10 dB/div 10.0	RF 50 Ω AC 4.87368622965	56 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	TYF DE	3 7 GHz 63 dBm	Peak Search Next Peak Next Pk Right Next Pk Left
10 dB/div 10.0 dB/div 10.0	RF 50 Ω AC 4.87368622965	56 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	TYF DE	3 7 GHz 63 dBm	Peak Search Next Peak Next Pk Right
10 dB/div 10.0 0.00 0.00 0.00 0.00 0.00 0.00 0.00	Ref 20.00 dBm	56 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	TYF DE	3 7 GHz 63 dBm	Peak Search Next Peak Next Pk Right Next Pk Left
10 dB/div 10.0 dB/div 10.0	RF 50 Ω AC 4.87368622965	56 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	TYF DE	3 7 GHz 63 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta
Marker 1           10 dB/div           10.0           10.0           -10.0           -20.0           -30.0	Ref 20.00 dBm	56 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	TYF DE	DL1 -16.23 dBm	Peak Search Next Peak Next Pk Right Next Pk Left
10 dB/div           10.0           10.0           -10.0           -20.0	Ref 20.00 dBm	56 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	TYF DE	DL1 -16.23 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta
Marker 1           10 dB/div           10.0           10.0           -10.0           -20.0           -30.0           -40.0           -50.0	Ref 20.00 dBm	56 GHz PNO: Fast IFGain:Low	Trig: Free	Run		e: Log-Pwr >100/100 Mk	-41.2	DL1 -16.23 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF
Marker 1           10 dB/div           10.0           10.0           -10.0           -20.0           -30.0	Ref 20.00 dBm	56 GHZ PNO: Fast IFGain:Low	Trig: Free Atten: 30			e: Log-Pwr :>100/100	-41.2	DL1 -16.23 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta
Marker 1           10 dB/div           10.0           10.0           -10.0           -20.0           -30.0           -40.0           -50.0	Ref 20.00 dBm	56 GHz PNO: Fast IFGain:Low	Trig: Free Atten: 30			e: Log-Pwr >100/100 Mk	-41.2	DL1 -16.23 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF
Marker 1           10 dB/div           10.0           10.0           .10.0           .20.0           .30.0           .40.0           .50.0           .40.0	Ref 20.00 dBm	56 GHZ PNO: Fast IFGain:Low	Trig: Free Atten: 30			e: Log-Pwr >100/100 Mk	-41.2	DL1 -16.23 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF Mkr→Ref Lvl
10         B           10.0	Ref 20.00 dBm	56 GHZ PNO: Fast IFGain:Low	Trig: Free Atten: 30			e: Log-Pwr >100/100 Mk	-41.2	DL1 -16.23 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF
Marker 1           10 dB/div           10.0           10.0           10.0           -20.0           -30.0           -40.0           -60.0           -60.0           -70.0	Ref 20.00 dBm	56 GHZ PNO: Fast IFGain:Low	Trig: Free Atten: 30			e: Log-Pwr >100/100 Mk	stop 2 2.152 s (4	DL1 -16.23 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF Mkr→Ref Lvl More



Keysight Spee	ctrum Analyzer - Swept SA	A								- • •
l <mark>XI</mark>	RF 50 Ω A 917.32968324	AC		SEN	SE:INT		ALIGN AUTO	TRAC	E 1 2 3 4 5 6	Peak Search
indi Kon T			Fast 😱	Trig: Free Atten: 30		Avg Hold:	:>100/100	TYF		
							Mkr	1 917.3	30 MHz 78 dBm	NextPeak
10 dB/div <sup>Log</sup>	Ref 20.00 dBr	m		,	Y			-59.0		
10.0										Next Pk Right
0.00										Next Dist. of
-10.0										Next Pk Left
-20.0									DL1 -15.94 dBm	
										Marker Delta
-30.0										
-40.0										Mkr→CF
-50.0										
-60.0									<b>•</b> <sup>1</sup>	
and that		n linn han deline and a state of the state o	na), na dhini na Rafarra na sa dh	a <mark>ballan kana kana bas</mark> Tana sa pasa sa kana ka		an darik diridanski <mark>Articenski sekolari</mark>	langa pangangangangangan Angkangangangangangan	and the second		Mkr→RefLv
-70.0										
Start 0.03	00 GHz							Stop 1.0	0000 GHz	More 1 of 2
#Res BW			#VBW	300 kHz		s	weep 93	.33 ms (4	0000 pts)	T OT 2
MSG							STATUS			
Keysight Spec	ctrum Analyzer - Swept SA RF 50 Ω A			SEN	SE:INT		ALIGN AUTO			
XI		ac 363 GHz PNO:	Fast 🖵	Trig: Free	e Run		: Log-Pwr	TRAC	E E M W W W W W W W W W	Peak Search
<mark>XI</mark>	RF 50 Ω A	ac 363 GHz	Fast 🖵		e Run	Avg Type	:: Log-Pwr :>100/100	2.380 8	55 GHz	Peak Search
<mark>x</mark> Marker 1	RF 50 Ω A	AC 363 GHz PNO: IFGain	Fast 🗭	Trig: Free	e Run	Avg Type	:: Log-Pwr :>100/100	2.380 8	E 1 2 3 4 5 6 E MWWWW T P NNNN 55 GHz 12 dBm	Peak Search
Marker 1 10 dB/div	RF 50 Ω A 2.3808545213	AC 363 GHz PNO: IFGain	Fast 😱	Trig: Free	e Run	Avg Type	:: Log-Pwr :>100/100	2.380 8	55 GHz	Peak Search Next Peak
XI	RF 50 Ω A 2.3808545213	AC 363 GHz PNO: IFGain	Fast 🕞	Trig: Free	e Run	Avg Type	:: Log-Pwr :>100/100	2.380 8	55 GHz	Peak Search Next Peak
Marker 1	RF 50 Ω A 2.3808545213	AC 363 GHz PNO: IFGain	Fast G	Trig: Free	e Run	Avg Type	:: Log-Pwr :>100/100	2.380 8	55 GHz	Peak Search Next Peak
Marker 1 10 dB/div	RF 50 Ω A 2.3808545213	AC 363 GHz PNO: IFGain	Fast 🕞	Trig: Free	e Run	Avg Type	:: Log-Pwr :>100/100	2.380 8	55 GHz	Peak Search Next Peak Next Pk Right
10 dB/div 10.0 10.0 -10.0	RF 50 Ω A 2.3808545213	AC 363 GHz PNO: IFGain	Fast G	Trig: Free	e Run	Avg Type	:: Log-Pwr :>100/100	2.380 8	55 GHz	Peak Search Next Peak Next Pk Right
10 dB/div 10.0 10.0	RF 50 Ω A 2.3808545213	AC 363 GHz PNO: IFGain	Fast 🕞	Trig: Free	e Run	Avg Type	:: Log-Pwr :>100/100	2.380 8	55 GHz 12 dBm	Peak Search Next Peak Next Pk Right Next Pk Left
10 dB/div 10.0 dB/div 10.0	RF 50 Ω A 2.3808545213	ac <b>363 GHz</b> PNO: IFGain	Fast 🕞	Trig: Free	e Run	Avg Type	:: Log-Pwr :>100/100	2.380 8	55 GHz 12 dBm	Peak Search Next Peak Next Pk Right Next Pk Left
10.0 dB/div 10.0 0.00	RF 50 Ω A 2.3808545213	ac <b>363 GHz</b> PNO: IFGain	Fast C	Trig: Free	e Run	Avg Type	:: Log-Pwr :>100/100	2.380 8	55 GHz 12 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta
Xi         Xi           Marker 1         10.0           10.0	RF 50 Ω A 2.3808545213	ac <b>363 GHz</b> PNO: IFGain	Fast 🕞	Trig: Free	e Run	Avg Type	:: Log-Pwr :>100/100	2.380 8	55 GHz 12 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta
Marker 1           10 dB/div           10.0           0.000           -10.0           -20.0           -30.0           -30.0           -50.0	RF         50 Ω         A           2.3808545213         A         A           Ref 20.00 dBr         A         A	MC SACENCY SAC	Low	Trig: Free Atten: 30	e Run ) dB	Avg Type Avg Hold:	:: Log-Pwr >100/100 MIKr1	2.380 8 -57.6	55 GHz 12 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta
XI           Marker 1           10 dB/div           10.0           -10.0           -20.0           -30.0           -30.0           -50.0	RF 50 Ω A 2.3808545213	MC SACENCY SAC	Low	Trig: Free Atten: 30	e Run ) dB	Avg Type Avg Hold:	:: Log-Pwr >100/100 MIKr1	2.380 8 -57.6	55 GHz 12 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF
XI           Marker 1           10 dB/div           10.0           -10.0           -20.0           -30.0           -30.0           -50.0	RF         50 Ω         A           2.3808545213         A         A           Ref 20.00 dBr         A         A	MC SACENCY SAC	Low	Trig: Free Atten: 30	e Run ) dB	Avg Type Avg Hold:	:: Log-Pwr >100/100 MIKr1	2.380 8 -57.6	55 GHz 12 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF
XI           Marker 1           10.0           10.0           0.00           -10.0           -20.0           -30.0           -40.0           -50.0           -50.0           -70.0	RF         50 Ω         A           2.3808545213	MC SACENCY SAC	Low	Trig: Free Atten: 30	e Run ) dB	Avg Type Avg Hold:	:: Log-Pwr >100/100 MIKr1	2.380 8 -57.6	DL1 -15.94 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF Mkr→Ref Lvi More
10.0 dB/div 10.0	Ref         50 Ω         A           2.3808545213	MC SACENCY SAC		Trig: Free Atten: 30		Avg Type Avg Hold:	:: Log-Pwr >100/100 MIKr1	2.380 8 -57.6	0L1 -15.94 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF Mkr→Ref Lvl More 1 of 2

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

Page 27 of 85



🚾 Keysight Spe	ectrum Analyzer - Swept SA	4				- • •
<mark>XI</mark> Markar 4	RF 50 Ω A		SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6	Peak Search
Marker	4.923780094	PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	Avg Hold:>100/100		
10 dB/div	Ref 20.00 dBi	m		Mkr	4.923 8 GHz -41.689 dBm	Next Peal
10.0						Next Pk Righ
0.00					DL1 -15.94 dBm	Next Pk Lei
20.0						Marker Delt
40.0	1					Mkr→C
60.0 <mark>harihadi</mark>	a salin	aling, dag partitikan din dingga na ta Magailag pripal	a baaran taga ka fahada na a sa <sup>ala</sup> na Mangan yang na paga na sa	n fel an <sup>del</sup> land fen an en della della Norda della dell Norda della del	Alle Chaolas Angel an Alle Chaol Maria Angel ang Angel ang Angel ang Maria Angel ang Angel ang Angel ang Angel ang	Mkr→RefLv
70.0 Start 2.48	3 GHz 100 kHz	#\/BW	300 kHz	Sweep 2	Stop 25.00 GHz 152 s (40000 pts)	<b>Mor</b> 1 of
SG	NV 1112	#¥BW	0001112	Sweep 2.		

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





Keysigi	ht Spectrum Analyzer - Swept SA	1 1			1	
	RF 50 Ω AC er 1 2.39950998775		SENSE:INT	ALIGN AUTO	TRACE 1 2 3 4 5 6	Peak Search
		PNO: Fast 😱 IFGain:Low	Trig: Free Run Atten: 30 dB	Avg Hold:>100/100		
				Mkr1	2.399 510 GHz -38.442 dBm	Next Peak
10 dB/c	div Ref 20.00 dBm		•		-38.442 aBm	
10.0						Next Pk Right
10.0						J
0.00						
-10.0 —						Next Pk Left
-20.0 —						
-30.0 —					DL1 -31.97 dPm	Marker Delta
					1	
-40.0 —						Mkr→CF
-50.0 —						
					a seller hatslesseled aster	
-60.0	Recenter Januar a Maka da Manapal (na Maka	a David Haran In March Management			and the standard by the second standard standard by the second standard standard by the sec	Mkr→RefLvl
-70.0						
						More
	1.0000 GHz BW 100 kHz	#\(B\)(	300 kHz	Swoon 12	Stop 2.4000 GHz 6.0 ms (40000 pts)	1 of 2
MSG	BW 100 KHZ	#VDVV	300 KHZ	SWEEP TO		
				STATUS		
M Kausial	ht Saastaura Aastaasa Suurat SA			314103	1	
LXI	ht Spectrum Analyzer - Swept SA		SENSE:INT	ALIGN AUTO		Peak Search
LXI		PNO: Fast 😱	Trig: Free Run		TRACE 123456	Peak Search
LXI	RF 50 Ω AC			ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P NNNN 1 20,990 8 GHz	
Marke	er 1 20.9908369459	PNO: Fast 😱 IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 123456	Peak Search
w Marke	er 1 20.9908369459	PNO: Fast 😱 IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P NNNN 1 20,990 8 GHz	Peak Search Next Peak
Marke	er 1 20.9908369459	PNO: Fast 😱 IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P NNNN 1 20,990 8 GHz	Peak Search
Marke	er 1 20.9908369459	PNO: Fast 😱 IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P NNNN 1 20,990 8 GHz	Peak Search Next Peak
10 dB/d 10.0	er 1 20.9908369459	PNO: Fast 😱 IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P NNNN 1 20,990 8 GHz	Peak Search Next Peak Next Pk Right
10 dB/d 10.0	er 1 20.9908369459	PNO: Fast 😱 IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P NNNN 1 20,990 8 GHz	Peak Search Next Peak Next Pk Right
10 dB/c	er 1 20.9908369459	PNO: Fast 😱 IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P NNNN 1 20,990 8 GHz	Peak Search Next Peak Next Pk Right
10 dB/c 10.0 – 10.0 – 10.0 – 10.0 – 10.0 –	er 1 20.9908369459	PNO: Fast 😱 IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P NNNN 1 20,990 8 GHz	Peak Search Next Peak Next Pk Right
10 dB/c 10 dB/c 10.0 - 10.0 -	er 1 20.9908369459	PNO: Fast 😱 IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P NNNN 1 20,990 8 GHz	Peak Search Next Peak Next Pk Right Next Pk Left
10 dB/c 10.0 – 10.0 – 10.0 – 10.0 – -10.0 –	er 1 20.9908369459	PNO: Fast 😱 IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P NNNN 1 20,990 8 GHz	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta
Image: 2000 column         Image:	er 1 20.9908369459	PNO: Fast 😱 IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P NNNN 1 20,990 8 GHz	Peak Search Next Peak Next Pk Right Next Pk Left
Marke	er 1 20.990836945 div Ref 20.00 dBm	PNO: Fast IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 Miktr	TRACE 1 2 3 4 5 6 TYPE MWWW DET PINNNN 1 20.990 8 GHz -49.852 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta
Image: 2000 column         Image:	er 1 20.9908369459	PNO: Fast IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWW DET PINNNN 1 20.990 8 GHz -49.852 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta
Marke 10 dB/c 10.0 - 10.0 -	er 1 20.990836945 div Ref 20.00 dBm	PNO: Fast IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 Miktr	TRACE 1 2 3 4 5 6 TYPE MWWW DET PINNNN 1 20.990 8 GHz -49.852 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF
Imarke           10 dB/c           10.0           10.0           -10.0           -20.0           -30.0           -40.0	er 1 20.990836945 div Ref 20.00 dBm	PNO: Fast IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 Miktr	TRACE 1 2 3 4 5 6 TYPE MWWW DET PINNNN 1 20.990 8 GHz -49.852 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF Mkr→Ref Lvl
Image: 2000 color       10.0 dB/c       10.0 -       .0.00 -       .10.0 -       .20.0 -       .30.0 -       .40.0 -       .50.0 -       .60.0 -       .70.0 -       Start 2	RF         50 Ω         AC           er         1 20.9908369459         459           div         Ref 20.00 dBm         1           div         Ref 20.00 dBm	PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 MIKT	TRACE 1 2 3 4 5 6 TYPE MANNANY DET PINININ 1 20.990 8 GHz -49.852 dBm 0L1-31.97 dBm 1 0L1-31.97 dBm 1 1 5top 25.00 GHz	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF
Image: 2000 color       10.0 dB/c       10.0 -       .0.00 -       .10.0 -       .20.0 -       .30.0 -       .40.0 -       .50.0 -       .60.0 -       .70.0 -       Start 2	RF         50 Ω         AC           er         1 20.9908369455           div         Ref 20.00 dBm           div         Ref 20.00 dBm	PNO: Fast IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 MIKT	TRACE 1 2 3 4 5 6 TYPE MANNAN DET PNNNN 1 20.9900 8 GHz -49.852 dBm -49.852 dBm -0.1	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF Mkr→Ref Lvl More



Keysight Spectrum						- • •
	RF 50 Ω AC 7.962199055		SENSE:INT	ALIGN AUTO	TRACE 1 2 3 4 5 6 TYPE MWWWWW	Peak Search
		PNO: Fast 🖵 IFGain:Low	Trig: Free Run Atten: 30 dB	Avg Hold:>100/100	DET PNNNN	NextPeak
10 dBidiy R	ef 20.00 dBm			Mkr1	887.962 MHz -58.644 dBm	NEXIFEAN
10 dB/div R Log			Ĭ			
10.0						Next Pk Right
0.00						
-10.0						Next Pk Left
-10.0						
-20.0						Marker Delta
-30.0					DL1 -30.21 dBm	Marter Bela
-40.0						
-50.0						Mkr→CF
30.0					<b>♦</b> <sup>1</sup>	
-60.0					til ang i Tresse and proposition prints a Tresse and the state of the state of the state	Mkr→RefLvl
-70.0						
Start 0.0300	GH7				Stop 1.0000 GHz	More 1 of 2
#Res BW 10		#VBW	300 kHz	Sweep 93.3	33 ms (40000 pts)	1012
MSG				STATUS		
	RF 50 Ω AC		SENSE:INT	ALIGN AUTO		
LXI		PNO: Fast 😱	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 123456 TYPE MWWWWW DET P. N.N.N.N	Peak Search
LXI	RF 50 Ω AC		Taiau Easa Dua	Avg Type: Log-Pwr Avg Hold:>100/100	2.364 964 GHz	
Marker 1 2.3	RF 50 Ω AC	PNO: Fast 😱	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>100/100	DET PNNNN	Peak Search
Marker 1 2.3	RF 50 Q AC 364964124103	PNO: Fast 😱	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>100/100	2.364 964 GHz	Peak Search
Marker 1 2.:	RF 50 Q AC 364964124103	PNO: Fast 😱	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>100/100	2.364 964 GHz	Peak Search Next Peak
Marker 1 2.3	RF 50 Q AC 364964124103	PNO: Fast 😱	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>100/100	2.364 964 GHz	Peak Search Next Peak Next Pk Right
Marker 1 2.:	RF 50 Q AC 364964124103	PNO: Fast 😱	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>100/100	2.364 964 GHz	Peak Search Next Peak
Marker 1 2.: 10 dB/div R 10.0 0.00	RF 50 Q AC 364964124103	PNO: Fast 😱	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>100/100	2.364 964 GHz	Peak Search Next Peak Next Pk Right Next Pk Left
Marker 1 2.: 10 dB/div R 10.0 0.00 -10.0	RF 50 Q AC 364964124103	PNO: Fast 😱	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>100/100	2.364 964 GHz	Peak Search Next Peak Next Pk Right
Marker 1 2.: 10 dB/div R 10.0 0.00 -10.0 -20.0 -30.0	RF 50 Q AC 364964124103	PNO: Fast 😱	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>100/100	2.364 964 GHz	Peak Search Next Peak Next Pk Right Next Pk Left
Marker 1 2.: 10 dB/div R 10.0 .0.00 .10.0 .20.0 .30.0 .40.0	RF 50 Q AC 364964124103	PNO: Fast 😱	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>100/100	2.364 964 GHz	Peak Search Next Peak Next Pk Right Next Pk Left
Marker 1 2.: 10 dB/div R 10.0 0.00 -10.0 -20.0 -30.0	RF 50 Q AC 364964124103	PNO: Fast 😱	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>100/100	2.364 964 GHz	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta
Marker 1 2.: 10 dB/div R 10.0 .0.00 .10.0 .20.0 .30.0 .30.0 .50.0	RF   50 Q AC   364964124103	PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	Avg Type: Log-Pwr Avg Hold:>100/100	2.364 964 GHz	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta
Marker 1 2.: 10 dB/div R 10.0 .0.00 .10.0 .20.0 .30.0 .30.0 .50.0	RF   50 Q AC   364964124103	PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	Avg Type: Log-Pwr Avg Hold:>100/100 Mkr1 2	2.364 964 GHz	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF
Marker 1 2.: 10 dB/div R 10.0 0.00 -10.0 -20.0 -30.0 -40.0 -50.0 -50.0 -50.0 -60.0	RF   50 Ω AC   364964124103 ef 20.00 dBm	PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	Avg Type: Log-Pwr Avg Hold:>100/100 Mkr1 2 	2.364 964 GHz -55.528 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF Mkr→Ref Lvl More
Marker 1 2.: 10 dB/div R 10.0 10.0 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0 -60.0	RF 0 50 Q AC 364964124103	PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	Avg Type: Log-Pwr Avg Hold:>100/100	2.364 964 GHz	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF Mkr→Ref Lvl

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

Page 30 of 85





# TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE

OF 802.11g FOR MODULATION IN HIGH CHANNEL

Marker 1 929.357983950 MHz       Avg Type: Log-Pwr       Trace II 2 3 4 86       Peak Search         PN0: Fast Coll       Trig: Free Run Atten: 30 dB       Avg Type: Log-Pwr       Trid: Fig. 3 4 86       Next Pe         10 dE/div       Ref 20.00 dBm       Same Search       Next Pe       Next Pe         10 dE/div       Ref 20.00 dBm       Same Search       Next Pk Rig         10 dE/div       Ref 20.00 dBm       Same Search       Next Pk Rig         10 dE/div       Ref 20.00 dBm       Same Search       Next Pk Rig         10 dE/div       Ref 20.00 dBm       Same Search       Next Pk Rig         10 0       Same Search       Same Search       Next Pk Rig         10 0       Same Search       Same Search       Next Pk Rig         10 0       Same Search       Same Search       Next Pk Rig         20 0       Same Search       Same Search       Next Pk Rig         20 0       Same Search       Same Search       Marker De         30 0       Same Search       Same Search       Mkr-Atten Search         40 0       Same Search       Same Search       Mkr-Atten Search         40 0       Same Search       Same Search       Mkr-Atten Search         40 0       Same Search       Same S	Keysight Spe	ctrum Analyzer - Swept									
Nikr 1922.338 Minz         O dB/div       Ref 20.00 dBm       Start 0.030 dBm         Next Pk Rig	larker 1		950 MH	PNO: Fast 😱	Trig: Free	Run	Avg Type	: Log-Pwr	T	PE M WWWWW	
100       Image: Construction of the set of the	0 dB/div	Ref 20.00 dE	3m					M	kr1 929. -59.(	358 MHz )30 dBm	NextPea
1000       Image: Comparison of the state o											Next Pk Righ
20.0       Image: Stop 1.0000 GHz       Image: Stop 1.0000 GHz       Marker Det         20.0       Image: Stop 1.0000 GHz       Image: Stop 1.0000 GHz       Image: Stop 1.0000 GHz											Next Pk Le
50.0 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2										DL1 -19.36 dBm	Marker Del
											Mkr→C
70.0 Mic Start 0.0300 GHz Stop 1.0000 GHz 10		a group the strain of the strain strain the strain st		()	all all and and all a	eter i <sup>je</sup> kteta ke <sub>n</sub> nen jekt	Le Marth for over a brokens		र्षतीः दिर्गतः क्षेत्र क्षेत्र क्षेत्र स्वतः स	אין איז איז אין	Mkr→RefL
Start 0.0300 GHz Stop 1.0000 GHz 1 o		ington of the set Konstruct	den billisk dans sold galle	ferren forste inden en de	S., ja kolaya, Madalili A	ukanomekak erop	n - Nara y albin Bilan ya Miraida wa M	i pi de la cipetita de la cipetica d	eni teleseni isen sen sinti j	da 1929 (ad) (ban 196 a 196 a)	Mor
				#VBW	300 kHz		s	weep 9	Stop 1 3.33 ms (	.0000 GHz 40000 pts)	1 of



Keysight Spe	ectrum Analyzer - Swe RF 50 Ω	ept SA		SENSE:INT	4110	N AUTO		
	2.3900597			Free Run	Avg Type: Lo Avg Hold:>10	g-Pwr	TRACE 1 2 3 4 5 6 TYPE MWWWW DET P N N N N N	Peak Search
10 dBidiy	Ref 20.00 (					Mkr1 2.3	90 060 GHz 54.769 dBm	Next Peak
10 dB/div Log								
10.0								Next Pk Right
0.00								Next Pk Left
-10.0							DL1 -19,36 dBm	
-20.0								Marker Delta
-40.0								
-50.0							<u>1</u>	Mkr→CF
-60.0	en in the state of t	<mark>gil]bathatan panakhatakathat</mark>	standala, secolatore <mark>anternante</mark>	a ta ang ang ang ang ang ang ang ang ang an				Mkr→RefLvl
-70.0	a daa hii iyo ahaa ka daa ahaa daha daha daha	y, idil (shi tu da ana, tur fur fi Tabi) da la si	in a second s	lag blean in 21, cho a sub scienc constil	tente i fotolig polo de la Aldonia del Addenia			
Start 1.00 #Res BW	000 GHz					St	op 2.4000 GHz ms (40000 pts)	<b>More</b> 1 of 2
	100 KH2	#	VBW 300 k	ΠZ	Swe	STATUS	ms (40000 pts)	
	ectrum Analyzer - Swe	ept SA						- • •
Keysight Spe	ectrum Analyzer - Swe RF 50 Ω <b>2.4835000</b>	AC 00000 GHz	Tuin	SENSE:INT	Avg Type: Lo	N AUTO		Peak Search
Keysight Spe	RF 50 Ω	AC		SENSE:INT Free Run 1: 30 dB		N AUTO g-Pwr 0/100		
Keysight Spe XX Marker 1	RF 50 Ω	AC 000000 GHz PNO: Fat IFGain:Lo		Free Run	Avg Type: Lo	n AUTO g-Pwr 0/100 Mkr1 2	TRACE 1 2 3 4 5 6 TYPE MWWWWWW DET P NNNNN 2.483 5 GHz 47.046 dBm	Peak Search
Keysight Spe	RF 50 Ω 2.4835000	AC 000000 GHz PNO: Fat IFGain:Lo		Free Run	Avg Type: Lo	n AUTO g-Pwr 0/100 Mkr1 2		Peak Search
Keysight Spe Marker 1 10 dB/div	RF 50 Ω 2.4835000	AC 000000 GHz PNO: Fat IFGain:Lo		Free Run	Avg Type: Lo	n AUTO g-Pwr 0/100 Mkr1 2		Peak Search Next Peak
Meysight Spe IXI Marker 1 10 dB/div Log	RF 50 Ω 2.4835000	AC 000000 GHz PNO: Fat IFGain:Lo		Free Run	Avg Type: Lo	n AUTO g-Pwr 0/100 Mkr1 2	2.483 5 GHz 47.046 dBm	Peak Search Next Peak
Marker 1 10 dB/div Log	RF 50 Ω 2.4835000	AC 000000 GHz PNO: Fat IFGain:Lo		Free Run	Avg Type: Lo	n AUTO g-Pwr 0/100 Mkr1 2		Peak Search Next Peak Next Pk Right
Keysight Spe           X/I           Marker 1           10 dB/div           -0 g           10.0           -10.0	RF 50 Ω 2.4835000	AC 000000 GHz PNO: Fat IFGain:Lo		Free Run	Avg Type: Lo	n AUTO g-Pwr 0/100 Mkr1 2	2.483 5 GHz 47.046 dBm	Peak Search Next Peak Next Pk Right Next Pk Left
Keysight Spe (X)     Marker 1     10 dB/div     10.0     .0.00     .10.0     .20.0     .30.0     .40.0     .1	RF 50 Ω 2.4835000	AC 000000 GHz PNO: Fat IFGain:Lo		Free Run	Avg Type: Lo	n AUTO g-Pwr 0/100 Mkr1 2	2.483 5 GHz 47.046 dBm	Peak Search Next Peak Next Pk Right Next Pk Left
Keysight Spe 20 Marker 1 10 dB/div 10.0 -10.0 -10.0 -20.0 -40.0 -50.0	RF 50 Ω 2.4835000	dBm		Free Run	Avg Type: Lo Avg Hold:>10	N AUTO g-Pwr 0/100 Mkr1 :	DET P NNNNN 2.483 5 GHz 47.046 dBm DL1 -19.36 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta
Keysight Spe           Marker 1           10 dB/div           10.0           10.0           -10.0           -20.0           -30.0           -40.0           -50.0           -60.0           -attach	RF 50 Ω 2.4835000	AC 000000 GHz PNO: Fat IFGain:Lo		Free Run	Avg Type: Lo	N AUTO g-Pwr 0/100 Mkr1 :	DET P NNNNN 2.483 5 GHz 47.046 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta
Keysight Spectrum           Marker 1           10 dB/div           20           10.0           -10.0           -10.0           -20.0           -30.0           -40.0           -40.0           -70.0	Ref 20.00 (	dBm		Free Run	Avg Type: Lo Avg Hold:>10	A AUTO gPwr 0/100 Mkr1 : - - - - - - - - - - - - -	DET P NNNNN DET P NNNNN 2.483 5 GHz 47.046 dBm DL1-19.36 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF Mkr→Ref Lvl More
Keysight Spe           Marker 1           10 dB/div           10.0           10.0           -10.0           -20.0           -30.0           -40.0           -50.0           -60.0           -attach	Ref 20.00 (	dBm		Free Run : 30 dB	Avg Type: Lo Avg Hold:>10	AUTO g-Pwr 0/100 Mkr1 :	DET P NNNNN 2.483 5 GHz 47.046 dBm DL1 -19.36 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF Mkr→Ref Lvl



	906.707917		Z NO: Fast 😱	Trig: Free		Avg Type	ALIGN AUTO : Log-Pwr :>100/100	TRACE 12345 TYPE MWWWW DET PNNNN	Peak Search
		IF	Gain:Low	Atten: 30	dB		Miles		Nové Do -
) dB/div	Ref 20.00 d	IBm					IVIKI	1 906.708 MHz -59.091 dBm	
	1101 20.00 0								
0.0									Next Pk Rig
0.0									
).00									
0.0									Next Pk Le
U.U									
0.0									
									Marker De
0.0								DL1 -32.75 dBn	
0.0									
									Mkr→C
0.0								<u> </u>	
0.0				· b. b. data	da da ser			ell seven d'entre d'hannad hallen	T
dia dia mandri Reference	and all define the second second	1997 - Aliferia Andrewski, Angela Aliferia Andrewski, Angela	nang terperatur pana sa sa sa manana sa	a mailean ann ann ann ann ann.	and the second secon Second second		a southing and provide the state of the	and a state of the	Mkr→RefL
0.0									
									Мо
	300 GHz 100 kHz		#\/B\/	300 kHz			ween 03	Stop 1.0000 GHz 33 ms (40000 pts	
G G	TOO KI12		# <b>4</b> D 4 4	500 KHZ		<u> </u>	STATUS	33 ma (40000 pta	<u>u</u>
Keysight Sp	ectrum Analyzer - Swej RF 50 Ω			SEN	SE:INT		ALIGN AUTO		
arker 1	2.39947498		NO: Fast 😱	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	TRACE 1 2 3 4 5	Peak Search
		in in		A 44 00	dB	Avginoiu		TYPE M WWWWW	V
			Gain:Low	Atten: 30	ub	Avginoid		TRACE 1 2 3 4 5 TYPE MWWWW DET P N N N N	-
dBidiu	Pef 20.00 d		Gain:Low	Atten: 30	ub	Avginou		2.399 475 GH	NextPe
dB/div	Ref 20.00 d		Gain:Low	Atten: 30		Avginou			NextPe
<sup>yg</sup>	Ref 20.00 d		Gain:Low	Atten: 30				2.399 475 GH	Next Pe
<sup>,g</sup>	Ref 20.00 d		Gain:Low	Atten: 30				2.399 475 GH	Next Pea
	Ref 20.00 d		Gain:Low	Atten: 30		Avginou		2.399 475 GH	Next Pea
	Ref 20.00 d		Gain:Low	Atten: 30		Avginou		2.399 475 GH	Next Pea
	Ref 20.00 d		Gain:Low	Atten: 30		Avginou		2.399 475 GH	Next Pea
	Ref 20.00 d		Gain:Low	Atten: 30				2.399 475 GH	Next Pea
0.0B/div 0.0 0.0 0.0	Ref 20.00 d		Gain:Low	Atten: 30				2.399 475 GH; -41.879 dBn	Next Pea Next Pk Rig Next Pk Le Marker De
	Ref 20.00 d		Gain:Low	Atten: 30				2.399 475 GH	Next Pea Next Pk Rig Next Pk Le Marker De
	Ref 20.00 d		Gain:Low	Atten: 30				2.399 475 GH; -41.879 dBn	Next Per Next Pk Rig Next Pk Le Marker De
•9            .00            .00            .00            .00            .00            .00            .00            .00            .00            .00            .00            .00	Ref 20.00 d		Gain:Low	Atten: 30				2.399 475 GH; -41.879 dBn	Next Per Next Pk Rig Next Pk Lo Marker De
<b>99</b>	Ref 20.00 d		Gain:Low	Atten: 30				2.399 475 GH; -41.879 dBn	Next Per Next Pk Rig Next Pk Le Marker De
•9		IBm					Mkr1	2.399 475 GH; -41.879 dBn 0.1-32.75 dBn 1 	Next Pk Rig Next Pk Rig Marker De Mkr0
•••         •••           0.0         •••           0.00         •••           0.00         •••           0.00         •••           0.00         •••           0.00         •••           0.00         •••           0.00         •••           0.00         •••           0.00         •••           0.00         •••           0.00         •••	Ref 20.00 d	IBm					Mkr1	2.399 475 GH; -41.879 dBn 0.1-32.75 dBn 1 	Next Pk Rig Next Pk Rig Marker De Mkr0
•9		IBm					Mkr1	2.399 475 GH; -41.879 dBn 0.1-32.75 dBn 1 	Next Pk Rig Next Pk Rig Marker De Mkr0
99		IBm					Mkr1	2.399 475 GH; -41.879 dBn 0.1-32.75 dBn 1 	Next Per Next Pk Rig Next Pk Le Marker De Mkr→Ref L

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

Page 33 of 85





## TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE

OF 802.11n20 FOR MODULATION IN MIDDLE CHANNEL

									rum Analyzer - Sw	eysight Spe	- Ke
Peak Search	CE 123456 (PE MWWWW DET P NNNNN	VI TRAG	ALIGN AUTO :>Log-Pw :>100/100				Z PNO: Fast ⊂		RF 50 9 846.29965	rker 1	x Mai
Next Pea	300 MHz 59 dBm	/lkr1 846.3 -59.0	M					dBm	Ref 20.00	IB/div	10 d Log
Next Pk Righ					<b>.</b>						10.0
Next Pk Le											
Marker Del	DL1 -30.22 dBm										
Mkr→C											
Mkr→RefL	el el las d'Anores a marte. Se las composes a marte,	THERE'S AN AVERAGE AND		an di yan di di Disabili di Disa Talan seria seria da pi di dec			ter paragy specific to e	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		didia dali 1995 - Angeler	60.0
Mor 1 of	.0000 GHz 10000 pts)	Stop 1. 93.33 ms (4	weep			/ 300 kHz	#VBM		00 GHz 100 kHz	rt 0.03	Sta
			STAT								ISG



Keysight Spectrum Analyzer - Swept SA				
₩ RF 50 Ω AC Marker 1 2.365769144229 GHz	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE MWWWW	Peak Search
PNO: Fast 🏳 IFGain:Low	Trig: Free Run Atten: 30 dB	Avg Hold:>100/100	DET PNNNN	
		Mkr1 2	2.365 769 GHz	Next Peak
10 dB/div Ref 20.00 dBm	•		-55.053 dBm	
				Next Pk Right
10.0				nextra agin
0.00				
-10.0				Next Pk Left
10.0				
-20.0				
-30.0			DL1 -30.22 dBm	Marker Delta
-40.0				Mkr→CF
-50.0			1	
-60.0 Hitters in drawing the second state of t				Mkr→RefLvl
-70.0				
				More
Start 1.0000 GHz #Res BW 100 kHz #VBW 3	200 1/11-	0	Stop 2.4000 GHz	1 of 2
	300 kHz	Sweep 150	.0 ms (40000 pts)	
weysight Spectrum Analyzer - Swept SA K R F 50 Ω AC	SENSE:INT	ALIGN AUTO		
			TRACE REPORT	Peak Search
Marker 1 24.975231230781 GHz	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 123456 TYPE MWWWW DET PNNNNN	Peak Search
	Trig: Free Run Atten: 30 dB	Avg Type: Log-Pwr Avg Hold:>100/100	DET P NNNN	Peak Search Next Peak
PNO: Fast 🖵 IFGain:Low		Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET PNNNNN 24.975 2 GHz -48.097 dBm	
PNO: Fast 🖵 IFGain:Low		Avg Type: Log-Pwr Avg Hold:>100/100	24.975 2 GHz	Next Peak
PNO: Fast 🖵 IFGain:Low		Avg Type: Log-Pwr Avg Hold:>100/100	24.975 2 GHz	
10 dB/div Ref 20.00 dBm		Avg Type: Log-Pwr Avg Hold:>100/100	24.975 2 GHz	Next Peak
PNO: Fast IFGain:Low		Avg Type: Log-Pwr Avg Hold:>100/100	24.975 2 GHz	Next Peak
10 dB/div Ref 20.00 dBm		Avg Type: Log-Pwr Avg Hold:>100/100	24.975 2 GHz	Next Peak Next Pk Right
PNO: Fast IFGain:Low		Avg Type: Log-Pwr Avg Hold:>100/100	24.975 2 GHz	Next Peak Next Pk Right
PNO: Fast IC dB/div Ref 20.00 dBm		Avg Type: Log-Pwr Avg Hold:>100/100	24.975 2 GHz	Next Peak Next Pk Right
PNO: Fast IFGain:Low		Avg Type: Log-Pwr Avg Hold:>100/100	24.975 2 GHz -48.097 dBm	Next Peak Next Pk Right Next Pk Left
PNO: Fast IC dB/div Ref 20.00 dBm		Avg Type: Log-Pwr Avg Hold:>100/100	24.975 2 GHz -48.097 dBm	Next Peak Next Pk Right Next Pk Left Marker Delta
PN0: Fast IFGain:Low         PN0: Fast IFGain:Low           10 dB/div         Ref 20.00 dBm           10 0		Avg Type: Log-Pwr Avg Hold:>100/100 Mkr1	DET PINNNN 24.975 2 GHz -48.097 dBm DL1 -30 22 dBm	Next Peak Next Pk Right Next Pk Left
PNO: Fast IC dB/div Ref 20.00 dBm	Atten: 30 dB	Avg Type: Log-Pwr Avg Hold:>100/100 Mkr1	DET P NNNNN 24.975 2 GHz -48.097 dBm DL1 -30 22 dBm DL1 -30 22 dBm	Next Peak Next Pk Right Next Pk Left Marker Delta
PN0: Fast IFGain:Low         PN0: Fast IFGain:Low           10 dB/div         Ref 20.00 dBm           10 0	Atten: 30 dB	Avg Type: Log-Pwr Avg Hold:>100/100 Mkr1	DET PINNNN 24.975 2 GHz -48.097 dBm DL1 -30 22 dBm	Next Peak Next Pk Right Next Pk Left Marker Delta
PNO: Fast IFGain:Low           10 dB/div         Ref 20.00 dBm           10 0	Atten: 30 dB	Avg Type: Log-Pwr Avg Hold:>100/100 Mkr1	DET P NNNNN 24.975 2 GHz -48.097 dBm DL1 -30 22 dBm DL1 -30 22 dBm	Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF
PNO: Fast IFGain:Low         PNO: Fast IFGain:Low           10.0	Atten: 30 dB	Avg Type: Log-Pwr Avg Hold:>100/100 Mkr1	DET P NNNNN 24.975 2 GHz -48.097 dBm DL1 -30 22 dBm DL1 -30 22 dBm	Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF Mkr→Ref Lvl
PNO: Fast IC dB/div Ref 20.00 dBm 10.0 0.00 10.0 -0.0	Atten: 30 dB	Avg Type: Log-Pwr Avg Hold:>100/100 Mikr1	DET P NNNNN 24.975 2 GHz -48.097 dBm DL1 -30 22 dBm DL1 -30 22 dBm	Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF



Keysight Spe	ectrum Analyzer - Swep RF 50 Ω			SEN	SE:INT		ALIGN AUTO			
larker 1	787.103927	598 MH	Z NO: Fast 😱				: Log-Pwr	TRACE	123456 MWWWW PNNNNN	Peak Search
		IF	Gain:Low	Atten: 30						NextPea
0 dB/div	Ref 20.00 d	Bm					IVIKE	787.10 -59.29	5 dBm	
°g				Ĭ	/					
10.0										Next Pk Rig
0.00										
										Next Pk Le
0.0										HCATT KE
.0.0									0L1 -19.39 dBm	
										Marker De
0.0										
0.0										Mkr→0
0.0										
							<b>♦</b> <sup>1</sup>			
0.0 <mark>advekter</mark>	y ay how a surger of the state	a Mitena and			lind abdet down	ang	(paper linitation)			Mkr→Refl
0.0		a balan kanal (far is ka da	and the first statements		(M.Addidi.)	ى ئەلەر ۋەلەتىر بىنى بەر يەر بەر يەر يەر يەر يەر يەر يەر يەر يەر يەر ي				
										Mo
1								04am 4 0		
			#\/B\M	300 647			ween 03'	Stop 1.0	000 GHz	1 0
Res BW	00 GHz 100 kHz		#VBW	300 kHz		s	status	Stop 1.0 33 ms (40	000 GHz 0000 pts)	1 o
Res BW	100 kHz	+ SA	#VBW	300 kHz		s		33 ms (40	000 GHz 0000 pts)	
Res BW G Keysight Spe	100 kHz ctrum Analyzer - Swep RF 50 Ω	AC			SE:INT		STATUS	33 ms (40	0000 pts)	1 o
Res BW G Keysight Spe	100 kHz	AC 60244 GI P		SEN:	Run		STATUS ALIGN AUTO 2: Log-Pwr	33 ms (40	000 GHZ 0000 pts)	- 8
Res BW	100 kHz ctrum Analyzer - Swep RF 50 Ω	AC 60244 GI P	Hz NO: Fast 😱	SEN:	Run	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (40 TRACE TYPE DET 2.390 4	123456 MWWWWW PNNNN 10 GHz	- 8
Res BW G Keysight Spe arker 1	100 kHz ctrum Analyzer - Swep RF 50 Ω	AC 60244 G P IF	Hz NO: Fast 😱	SEN:	Run	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (40 TRACE TYPE DET 2.390 4	1 2 3 4 5 6 MWWWW P N N N N	Peak Search
Res BW Keysight Spe arker 1 dB/div	100 kHz sctrum Analyzer - Swep RF 50 Ω 2.39040976	AC 60244 G P IF	Hz NO: Fast 😱	SEN:	Run	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (40 TRACE TYPE DET 2.390 4	123456 MWWWWW PNNNN 10 GHz	Peak Search Next Pe
Res BW Keysight Spe arker 1 dB/div	100 kHz sctrum Analyzer - Swep RF 50 Ω 2.39040976	AC 60244 G P IF	Hz NO: Fast 😱	SEN:	Run	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (40 TRACE TYPE DET 2.390 4	123456 MWWWWW PNNNN 10 GHz	Peak Search Next Pe
Res BW	100 kHz sctrum Analyzer - Swep RF 50 Ω 2.39040976	AC 60244 G P IF	Hz NO: Fast 😱	SEN:	Run	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (40 TRACE TYPE DET 2.390 4	123456 MWWWWW PNNNN 10 GHz	Peak Search Next Pe
Res BW G Keysight Spe arker 1 0 dB/div 9 0.0 0.0	100 kHz sctrum Analyzer - Swep RF 50 Ω 2.39040976	AC 60244 G P IF	Hz NO: Fast 😱	SEN:	Run	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (40 TRACE TYPE DET 2.390 4	123456 MWWWWW PNNNN 10 GHz	Peak Search Next Pe Next Pk Rig
Res BW G G Keysight Spe G G G G G G G G G G G G G G G G G G G	100 kHz sctrum Analyzer - Swep RF 50 Ω 2.39040976	AC 60244 G P IF	Hz NO: Fast 😱	SEN:	Run	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (40 TRACE TYPE DET 2.390 4 -54.48	123456 M M NNNNN 10 GHz 3 dBm	Peak Search Next Pe Next Pk Rig
Keysight Spe arker 1 0.0	100 kHz sctrum Analyzer - Swep RF 50 Ω 2.39040976	AC 60244 G P IF	Hz NO: Fast 😱	SEN:	Run	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (40 TRACE TYPE DET 2.390 4 -54.48	123456 MWWWWW PNNNN 10 GHz	Peak Search Next Pe Next Pk Rig Next Pk L
Res BW G G Keysight Spe G G G G G G G G G G G G G G G G G G G	100 kHz sctrum Analyzer - Swep RF 50 Ω 2.39040976	AC 60244 G P IF	Hz NO: Fast 😱	SEN:	Run	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (40 TRACE TYPE DET 2.390 4 -54.48	123456 M M NNNNN 10 GHz 3 dBm	Peak Search Next Pe Next Pk Rig Next Pk L
Res BW G G Keysight Spe T T G G G G G G G G G G G G G G G G G	100 kHz sctrum Analyzer - Swep RF 50 Ω 2.39040976	AC 60244 G P IF	Hz NO: Fast 😱	SEN:	Run	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (40 TRACE TYPE DET 2.390 4 -54.48	123456 M M NNNNN 10 GHz 3 dBm	Peak Search
Res BW G G Keysight Spe T G G G G G G G G G G G G G G G G G G	100 kHz sctrum Analyzer - Swep RF 50 Ω 2.39040976	AC 60244 G P IF	Hz NO: Fast 😱	SEN:	Run	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (40 TRACE TYPE DET 2.390 4 -54.48	123456 M M NNNNN 10 GHz 3 dBm	Peak Search Next Pe Next Pk Rig Next Pk L Marker De
Res BW Reysight Spe arker 1 add div g g g g g g g g g g g g g	100 kHz sctrum Analyzer - Swep RF 50 Ω 2.39040976	AC 60244 G P IF	Hz NO: Fast 😱	SEN:	Run	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (40 TRACE TYPE DET 2.390 4 -54.48	123456 M M NNNNN 10 GHz 3 dBm	Peak Search Next Pe Next Pk Rig Next Pk L Marker De
Res BW           G           Keysight Spe           arker 1           0 dB/div           9           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0	100 kHz ctrum Analyzer - Swep RF 50 Ω 2.39040976 Ref 20.00 dl	ac   10244 GI P Bm	HZ NO: Fast Gain:Low	Trig: Free Atten: 30	Run dB	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (40 TRACE TYPE DET 2.390 4 -54.48	123456 M M NNNNN 10 GHz 3 dBm	Peak Search Next Pe Next Pk Rig Next Pk L Marker De
Res BW  Keysight Spe arker 1  add B/div  g arker 1  add B/div  g add B	100 kHz sctrum Analyzer - Swep RF 50 Ω 2.39040976	ac   10244 GI P Bm	HZ NO: Fast Gain:Low	Trig: Free Atten: 30	Run dB	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (40 TRACE TYPE DET 2.390 4 -54.48	123456 M M NNNNN 10 GHz 3 dBm	Peak Search Next Pe Next Pk Rig Next Pk L Marker De
Res BW           G           Keysight Spe           arker 1           0 dB/div           9           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0	100 kHz ctrum Analyzer - Swep RF 50 Ω 2.39040976 Ref 20.00 dl	ac   10244 GI P Bm	HZ NO: Fast Gain:Low	Trig: Free Atten: 30	Run dB	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (40 TRACE TYPE DET 2.390 4 -54.48	123456 M M NNNNN 10 GHz 3 dBm	Peak Search Next Pe Next Pk Rig Next Pk L Marker De
Res BW  Keysight Spe  dB/div  dB/div  dB/div  d  dB/div  d  d  d  d  d  d  d  d  d  d  d  d  d	100 kHz  ctrum Analyzer - Swep RF 50 Ω  2.39040976  Ref 20.00 dl	ac   10244 GI P Bm	HZ NO: Fast Gain:Low	Trig: Free Atten: 30	Run dB	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (40 TRACE TYPE DET 2.390 4 -54.48	1 2 3 4 5 6 M WWWWWW 10 GHz 3 dBm	Peak Search Next Pe Next Pk Rig Next Pk L Marker De Mkr→Ref I
Keysight Spe arker 1 adB/div 9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	100 kHz ctrum Analyzer - Swep RF 50 Ω 2.39040976 Ref 20.00 dl	ac   10244 GI P Bm	HZ NO: Fast Gain:Low	Trig: Free Atten: 30	Run dB		STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (40 TRACE TYPE 2.390 4 -54.48	1 2 3 4 5 6 M MININA 10 GHz 3 dBm 0L1 -19.39 dBm 0.00 GHz	Peak Search Next Pe Next Pk Rig Next Pk L

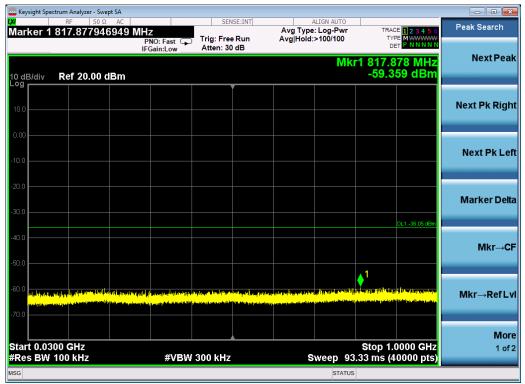
## TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11n20 FOR MODULATION IN HIGH CHANNEL

Page 36 of 85



Harker 1 2.484062926573 GHz       Trig: Free Run Areg Type: Log-Pwr       Trid: Trig: Free Run Areg Type: Log-Pwr       Trid: Tr	Keysight Spe	ectrum Analyzer - Swep									
Number       Trig: Free Run Atten: 30 dB       AvgiHoid:>100/100       Trig: Free Run Atten: 30 dB       Next Peak         0 dB/div       Ref 20.00 dBm	<mark>XI</mark> Morkor 1			24-	SEN	ISE:INT			TRA	CE 1 2 2 4 5 6	Peak Search
NIKL 2,484 T CH2         OBJECTIV       Ref 20.00 dBm       Ad6.257 dBm         Next Pk Right	Marker	2.46406292		PNO: Fast 😱					TY	PE M WWWW	
1000	10 dB/div	Ref 20.00 d	Bm					Μ	kr1 2.48 -46.2	4 1 GHz 57 dBm	NextPeak
1000       Image: Constraint of the constrai	10.0										Next Pk Right
And a set of the set o	-10.0										Next Pk Left
S000       Image: S000	-20.0									DL1 -19.39 dBm	Marker Delta
S000 Links and define the second states of the balance of the	-40.0 • 1										Mkr→CF
tart 2.48 GHz Stop 25.00 GHz 1 of 2 Res BW 100 kHz #VBW 300 kHz Sweep 2.152 s (40000 pts)	-50.0		nda literatur. Manana yana ya	land <mark>d</mark> an Milahian Janjarah Manif <sup>an</sup> Panangan Jangarah	a dhandaradh an a'	han belander Hennessen	andre and the state of the stat	diana a su	All and a second second	A PHERICAL STREET	Mkr→RefLv
				<i>4</i> ) (5).	000 111-				Stop 2	25.00 GHz	
	FRES BW	100 KH2		#VBW	300 KHZ				_	ruuuu prs)	

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





	ectrum Analyzer - Swe									- • •
Marker 1	RF 50 Ω 2.39614990	03748 GHz		SEN			ALIGN AUTO : Log-Pwr	TRAC	DE 123456 PE MWWWW	Peak Search
		PNO: IFGair	:Fast 🖵 n:Low	Atten: 30		Avginoid		D		NextPeak
	Ref 20.00 c	1Bm					Mkr1	2.396 1	l50 GHz 89 dBm	Nextreak
10 dB/div Log	Kei 20.00 t			`						
10.0										Next Pk Right
0.00										Next Pk Left
-10.0										NEXT FK LEIL
-20.0										
										Marker Delta
-30.0									DL1 -36.05 d_	
-40.0										Mkr→CF
-50.0									<mark>8</mark>	Miki→Ci
									A	
-60.0			ini ang pini			light opportunit to the state of the state o	n den staten digen die Nywelsen werden die state	in Dissipation in the	and a state of the	Mkr→RefLvl
-70.0										
										More
Start 1.00 #Res BW	000 GHz 100 kHz		#VBW	300 kHz		9	weep 13		4000 GHz 10000 pts)	1 of 2
MSG							STATUS			
Keysight Spe	ectrum Analyzer - Swe	:pt SA								_ = _
LXI	RF 50 Ω	AC	Z		ISE:INT	Avg Type	ALIGN AUTO	TRA	CE <b>1 2 3 4 5</b> 6	Peak Search
LXI		AC 220281 GH PNO:	Z : Fast 😱 n:Low		Run		e: Log-Pwr	TRAC TY D	CE 1 2 3 4 5 6 PE M <del>WWWW</del> ET P N N N N N	Peak Search
Marker 1	RF 50 Ω 24.9983112	AC 220281 GH PNO: IFGair	: Fast 😱	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	□ 1 24.99	8 3 GHz	
LXI	RF 50 Ω	AC 220281 GH PNO: IFGair	: Fast 😱	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	□ 1 24.99		Peak Search
Marker 1	RF 50 Ω 24.9983112	AC 220281 GH PNO: IFGair	: Fast 😱	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	□ 1 24.99	8 3 GHz	Peak Search
Marker 1 10 dB/div Log	RF 50 Ω 24.9983112	AC 220281 GH PNO: IFGair	: Fast 😱	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	□ 1 24.99	8 3 GHz	Peak Search Next Peak
Marker 1	RF 50 Ω 24.9983112	AC 220281 GH PNO: IFGair	: Fast 😱	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	□ 1 24.99	8 3 GHz	Peak Search Next Peak Next Pk Right
Marker 1 10 dB/div Log	RF 50 Ω 24.9983112	AC 220281 GH PNO: IFGair	: Fast 😱	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	□ 1 24.99	8 3 GHz	Peak Search Next Peak
10 dB/div 10.0 0	RF 50 Ω 24.9983112	AC 220281 GH PNO: IFGair	: Fast 😱	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	□ 1 24.99	8 3 GHz	Peak Search Next Peak Next Pk Right
10 dB/div           10.00           10.00           -10.00           -20.00	RF 50 Ω 24.9983112	AC 220281 GH PNO: IFGair	: Fast 😱	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	□ 1 24.99	8 3 GHz	Peak Search Next Peak Next Pk Right
10 dB/div 10.0 0	RF 50 Ω 24.9983112	AC 220281 GH PNO: IFGair	: Fast 😱	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	□ 1 24.99	8 3 GHz 30 dBm	Peak Search Next Peak Next Pk Right Next Pk Left
10 dB/div           10.00           10.00           -10.00           -20.00	RF 50 Ω 24.9983112	AC 220281 GH PNO: IFGair	: Fast 😱	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	□ 1 24.99	8 3 GHz	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta
10 dB/div           10.00           10.00           -10.00           -20.00           -30.00	RF 50 Ω 24.9983112	AC 220281 GH PNO: IFGair	: Fast 😱	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	-48.4	B 3 GHz 30 dBm	Peak Search Next Peak Next Pk Right Next Pk Left
10 dB/div           10.00           10.00           10.00           -10.00           -30.00	RF 50 Ω 24.9983112	AC 220281 GH PNO: IFGair	: Fast 😱	Trig: Free	Run	Avg Type Avg Hold	e: Log-Pwr :>100/100	□ 1 24.99	B 3 GHz 30 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta
10 dB/div           10.00           10.00           -10.00           -20.00           -30.00	RF 50 Ω 24.9983112	AC 220281 GH PNO: IFGair	: Fast 😱	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	-48.4	B 3 GHz 30 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta
Imarker         Imarker <thimarker< th=""> <th< th=""><td>RF 50 Ω 24.9983112</td><td>AC 220281 GH PNO: IFGair</td><td>: Fast 😱</td><td>Trig: Free</td><td>Run</td><td>Avg Type Avg Hold</td><td>e: Log-Pwr :&gt;100/100</td><td>-48.4</td><td>B 3 GHz 30 dBm</td><td>Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF</td></th<></thimarker<>	RF 50 Ω 24.9983112	AC 220281 GH PNO: IFGair	: Fast 😱	Trig: Free	Run	Avg Type Avg Hold	e: Log-Pwr :>100/100	-48.4	B 3 GHz 30 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF
Imarker         Imarker <thimarker< th=""> <th< th=""><td>Ref       50 Ω         24.9983112       Ref 20.00 c         Ref       20.00 c         Image: state sta</td><td>AC 220281 GH PNO: IFGair</td><td>: Fast 😱</td><td>Trig: Free</td><td>Run</td><td>Avg Type Avg Hold</td><td>e: Log-Pwr :&gt;100/100</td><td>-48.4</td><td>DL1 -36.05 dBm</td><td>Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF</td></th<></thimarker<>	Ref       50 Ω         24.9983112       Ref 20.00 c         Ref       20.00 c         Image: state sta	AC 220281 GH PNO: IFGair	: Fast 😱	Trig: Free	Run	Avg Type Avg Hold	e: Log-Pwr :>100/100	-48.4	DL1 -36.05 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF
Del log         Josephilie         Josephilie <thjosephilie< th="">         Josephilie         Josephilie&lt;</thjosephilie<>	PF 50 Ω 24.9983112 Ref 20.00 c	AC 220281 GH PNO: IFGair	: Fast m:Low	Trig: Free		Avg Type Avg Hold	e: Log-Pwr :>100/100 Mkr	5 top 2	B 3 GHz 30 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF Mkr→Ref Lvl



Keysight Sp	ectrum Analyzer - Swept RF 50 Ω				UCE JINE					
Marker '	1 984.188604 <sup>-</sup>	P	NO: Fast 😱				ALIGN AUTO e: Log-Pwr :>100/100	TRACE TYPE DET	123456 MWWWWW PNNNNN	Peak Search
		IFC	Gain:Low	Atten. 5	U U D		Mkr	1 984.18	39 MHz	Next Pea
10 dB/div - <sup>og</sup> r	Ref 20.00 de	Зm		1	•			-59.30	0 dBm	
10.0										Next Pk Righ
10.0										J
0.00										
-10.0										Next Pk Le
20.0										
30.0										Marker Del
30.0								C	0L1 -35.32 dBm	
40.0										Mkr→C
-50.0									1	
60.0	The street of a strength factor (Astro-		to tech in .		udd te contra		الألفان أحداد معارية		and a second	Mkr. Doff
-70.0			and the state of the second se		an da ada an an an an	an a	وقداه وللمزار والعدر والم	an an air bha chitha tha air	iter and the second second	Mkr→RefL
.70.0										Mor
	300 GHz		<i>(</i> ) ( <b>)</b> (		<b>^</b>			Stop 1.0		1 of
	/ 100 kHz		#vB₩	/ 300 kHz		8	weep 93.	.33 ms (41	JUUU ptsj	
							STATUS			
Kevsight Sp	pectrum Analyzer - Swept	: SA					STATUS			
XI	ectrum Analyzer - Swept RF 50 Ω 1 2.39950998	AC	Hz		NSE:INT	Avg Type	ALIGN AUTO	TRACE	<b>1</b> 2 3 4 5 6	Peak Search
U .	RF 50 Ω	AC 7750 GH PI	<b>IZ</b> NO: Fast ⊂ <b>→</b> Gain:Low		e Run		ALIGN AUTO e: Log-Pwr :>100/100	DET	123456 M <del>WWWW</del> PNNNN	Peak Search
a Aarker '	RF 50 Ω 1 2.39950998	AC 7750 GH PI IFC	NO: Fast 😱	Trig: Fre	e Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	2.399 5	PNNNN 10 GHz	Peak Search
Marker '	RF 50 Ω	AC 7750 GH PI IFC	NO: Fast 😱	Trig: Fre	e Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	2.399 5	PNNNNN	Peak Search
Marker '	RF 50 Ω 1 2.39950998	AC 7750 GH PI IFC	NO: Fast 😱	Trig: Fre	e Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	2.399 5	PNNNN 10 GHz	Peak Search Next Pea
Marker '	RF 50 Ω 1 2.39950998	AC 7750 GH PI IFC	NO: Fast 😱	Trig: Fre	e Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	2.399 5	PNNNN 10 GHz	Peak Search Next Pea
0 dB/div	RF 50 Ω 1 2.39950998	AC 7750 GH PI IFC	NO: Fast 😱	Trig: Fre	e Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	2.399 5	PNNNN 10 GHz	Peak Search Next Pea Next Pk Righ
Marker '	RF 50 Ω 1 2.39950998	AC 7750 GH PI IFC	NO: Fast 😱	Trig: Fre	e Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	2.399 5	PNNNN 10 GHz	Peak Search Next Pea Next Pk Righ
Marker ^ 10 dB/div ^9 10.0	RF 50 Ω 1 2.39950998	AC 7750 GH PI IFC	NO: Fast 😱	Trig: Fre	e Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	2.399 5	PNNNN 10 GHz	Peak Search Next Pea Next Pk Righ Next Pk Le
" Marker ' O dB/div O dB/div O dB/div	RF 50 Ω 1 2.39950998	AC 7750 GH PI IFC	NO: Fast 😱	Trig: Fre	e Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	2.399 5 -45.75	10 GHz 8 dBm	Peak Search Next Pea Next Pk Righ Next Pk Le
0 dB/div 0 dB/div 0 00 0.00	RF 50 Ω 1 2.39950998	AC 7750 GH PI IFC	NO: Fast 😱	Trig: Fre	e Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	2.399 5 -45.75	PNNNN 10 GHz	Peak Search Next Pea Next Pk Righ Next Pk Le Marker Del
0 dB/div           0.00	RF 50 Ω 1 2.39950998	AC 7750 GH PI IFC	NO: Fast 😱	Trig: Fre	e Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	2.399 5 -45.75	10 GHz 8 dBm	Peak Search Next Pea Next Pk Righ Next Pk Le Marker Del
0 dB/div           0.00	RF 50 Ω 1 2.39950998	AC 7750 GH PI IFC	NO: Fast 😱	Trig: Fre	e Run	Avg Type	ALIGN AUTO e: Log-Pwr :>100/100	2.399 5 -45.75	10 GHz 8 dBm	Peak Search Next Pea Next Pk Rigi Next Pk Le Marker Del
0 dB/div           0.00	RF 50 Ω 1 2.39950998	AC 7750 GH IFC BM	NO: Fast Gain:Low	Trig: Fre	e Run D dB	Avg Type Avg Hold	ALIGN AUTO :: Log-Pwr :>100/100 MIKT1	2.399 5 -45.75	10 GHz 8 dBm	Peak Search Next Pea Next Pk Righ Next Pk Le Marker Def Mkr→C
10 dB/div           0.00           .000	Ref 20.00 dE	AC 7750 GH IFC BM	NO: Fast Gain:Low	Trig: Fre	e Run D dB	Avg Type Avg Hold	ALIGN AUTO :: Log-Pwr :>100/100 MIKT1	2.399 5 -45.75	10 GHz 8 dBm	Peak Search Next Pea Next Pk Righ Next Pk Le Marker Def Mkr→C
0     dB/div       0     0       0     0       0     0       10     0       0     0       10 <td>RF         50 Ω           1 2.39950998         Ref 20.00 dB           Ref 20.00 dB         Ref 20.00 dB</td> <td>AC 7750 GH IFC BM</td> <td>NO: Fast Gain:Low</td> <td>Trig: Fre</td> <td>e Run D dB</td> <td>Avg Type Avg Hold</td> <td>ALIGN AUTO :: Log-Pwr :&gt;100/100 MIKT1</td> <td>2.399 5 -45.75</td> <td>DL1 -35.32 dBm</td> <td>Peak Search Next Pea Next Pk Righ Next Pk Le Marker Def Mkr→C Mkr→Ref Li</td>	RF         50 Ω           1 2.39950998         Ref 20.00 dB           Ref 20.00 dB         Ref 20.00 dB	AC 7750 GH IFC BM	NO: Fast Gain:Low	Trig: Fre	e Run D dB	Avg Type Avg Hold	ALIGN AUTO :: Log-Pwr :>100/100 MIKT1	2.399 5 -45.75	DL1 -35.32 dBm	Peak Search Next Pea Next Pk Righ Next Pk Le Marker Def Mkr→C Mkr→Ref Li
0     dB/div       0     gB/div       0     0	Ref 20.00 dE	AC 7750 GH IFC BM	NO: Fast Gain:Low	Trig: Fre			ALIGN AUTO :: Log-Pwr :>100/100 MIKT1	2.399 5 -45.75	Del 1 - 35 32 dBm	Peak Search Next Pea Next Pk Righ Next Pk Le Marker Delt Mkr→C Mkr→Ref Ly Mor 1 of

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

Page 39 of 85



	ectrum Analyzer - Sw									
		2 AC		SEN	SE:INT		ALIGN AUTO	TRA	CE 1 2 3 4 5 6	Peak Search
larker 1	1 2.4880034	12585	PNO: Fast IFGain:Low	Trig: Free Atten: 30		Avg Hold:		TY		
							М	kr1 2.48	8 0 GHz	NextPea
0 dB/div	Ref 20.00	dBm						-47.4	17 dBm	
° <sup>g</sup>				````						
10.0										Next Pk Righ
10.0										j.
).00 <b></b>										
10.0										Next Pk Le
20.0										
										Marker Del
30.0										
									DL1 -35.32 dBm	
.0.0 <mark>  1</mark>										Mkr→C
<u> </u>										WIKI→C
50.0						والد فقر ب		. In the stable law blo	والمتحافظ المتحافظ المتحاد	
60.0	, deallanded and	المرار المسرو	فيلب بأسيقه والأسيد	a statistica de la companya da la co	the New York	and a start of the local of the	A STREET STREET	and the likely states	and a state of the	
	and the second s	and the state of the	and the states have a second	در معروه بد آنواه در آنوری	And a second	and the second second	CONTRACTOR OF A DESCRIPTION			Mkr→RefL
70.0	(Long)									
										Мо
tart 2.48	8 GHz 100 kHz		#)(D)M	300 kHz			Swoon	Stop 2	25.00 GHz 40000 pts)	1 of
	TOUKHZ		#VBW	300 KH2				_	roooo pisj	
SG							STATU	IS		

## TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE

OF 802.11n40 FOR MODULATION IN HIGH CHANNEL





Keysight Spe	ectrum Analyzer - Swe RF 50 Ω			SEN	ISE:INT		ALIGN AUTO			
	2.3995449	88625 GHz PNO: F	Fast 😱	Trig: Free Atten: 30	Run		e: Log-Pwr	TRAC TYP DE	E 1 2 3 4 5 6 E M <del>WWWW</del> T P N N N N N	Peak Search
	Ref 20.00	IFGain:l	LOW	Atten: 50	ub		Mkr1	2.399 5		Next Peak
10 dB/div	Rei 20.000									
10.0										Next Pk Right
0.00										Next Pk Left
-10.0										
-30.0										Marker Delta
40.0									DL1 -34.94 dBm	
-40.0									1/	Mkr→CF
									الماسلىد بالقرور ب	
-60.0	ante cana de cherpere e la la canadar Alexandre e canadar a service de la canadar Alexandre e canadar a service de la canadar de la canad			territik terhitik Kapana di sepirat	al de parte (1997) presente partes	a film and an an an ann a bhairtean an a		n y frie trip blir i f n a san sin di da wit		Mkr→RefLvl
										More
Start 1.00 #Res BW	00 GHz 100 kHz	:	#VBW 3	300 kHz		s	weep 13	Stop 2.4 6.0 ms (4	000 GHz 0000 pts)	1 of 2
MSG							STATUS			
	ectrum Analyzer - Swe				CE JAIT					
I,XI		AC 53146 GHz	Fast 🕟	Trig: Free			ALIGN AUTO e: Log-Pwr :>100/100	TRAC	E 1 2 3 4 5 6 E M WWWWW	Peak Search
Marker 1	RF 50 Ω 2.4846258	AC 53146 GHz PNO: F IFGain:1	Fast 🖵 Low		Run	Avg Type	e: Log-Pwr :>100/100	r1 2.484		
I,XI	RF 50 Ω	AC 53146 GHz PNO: F IFGain:1		Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	r1 2.484		Peak Search
Marker 1	RF 50 Ω 2.4846258	AC 53146 GHz PNO: F IFGain:1		Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	r1 2.484		Peak Search
Marker 1	RF 50 Ω 2.4846258	AC 53146 GHz PNO: F IFGain:1		Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	r1 2.484		Peak Search Next Peak Next Pk Right
Marker 1	RF 50 Ω 2.4846258	AC 53146 GHz PNO: F IFGain:1		Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	r1 2.484		Peak Search Next Peak
Marker 1 10 dB/div 10.0	RF 50 Ω 2.4846258	AC 53146 GHz PNO: F IFGain:1		Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	r1 2.484		Peak Search Next Peak Next Pk Right
Marker 1 10 dB/div 10.0 10.0 -10.0 -20.0 -30.0	RF 50 Ω 2.4846258	AC 53146 GHz PNO: F IFGain:1		Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	r1 2.484		Peak Search Next Peak Next Pk Right Next Pk Left
Marker 1 10 dB/div 10.0 -10.0 -20.0	RF 50 Ω 2.4846258	AC 53146 GHz PNO: F IFGain:1		Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	r1 2.484	6 GHz 05 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta
Marker 1 10 dB/div 10.0 10.0 -10.0 -20.0 -30.0 1	RF 50 Ω 2.4846258	AC 53146 GHz PNO: F IFGain:1		Trig: Free Atten: 30	Run dB	Avg Type	e: Log-Pwr :>100/100	r1 2.484 -40.61		Peak Search Next Peak Next Pk Right Next Pk Left
Marker 1 10 dB/div 10.0 10.0 -10.0 -20.0 -30.0 -40.0	Ref 20.00 (	AC 53146 GHz PNC: F IFGain: dBm		Trig: Free	Run dB	Avg Type	e: Log-Pwr :>100/100	r1 2.484 -40.61		Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta
Marker 1 10 dB/div 10.0 10.0 -10.0 -20.0 -30.0 -40.0 -50.0	Ref 20.00 (	AC 53146 GHz PNO: F IFGain:1		Trig: Free Atten: 30	Run dB		e: Log-Pwr :>100/100	r1 2.484 -40.61		Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF Mkr→Ref Lvl
Marker 1 10 dB/div 10.0 10.0 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0	Ref 20.00 (	AC 53146 GHz PNO: F IFGain: dBm		Trig: Free Atten: 30			e: Log-Pwr :>100/100	r1 2.484 -40.60	0L1 -34.94 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF



# 6. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY

## **6.1 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 AVGPSD-1 in the ANSI C63.10 (2013) item 11.10 was used in this testing.

## 6.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer To Section 4.2.

### **6.3 LIMITS AND MEASUREMENT RESULT**

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

Channel No.	Power density (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-11.408	8	Pass
Middle Channel	-10.370	8	Pass
High Channel	-9.678	8	Pass

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

Channel No.	Power density (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-15.476	8	Pass
Middle Channel	-13.630	8	Pass
High Channel	-12.432	8	Pass



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

Channel No.	Power density (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-15.415	8	Pass
Middle Channel	-13.429	8	Pass
High Channel	-13.288	8	Pass

TEST ITEM	POWER SPECTRAL DENSITY
TEST MODE	802.11n 40 with data rate 13.5

Channel No.	Power density (dBm/20kHz)		
Low Channel	-17.247	8	Pass
Middle Channel	-16.413	8	Pass
High Channel	-16.287	8	Pass





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

Page 44 of 85

TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL







### TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

Page 45 of 85

### 802.11g TEST RESULT

TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL



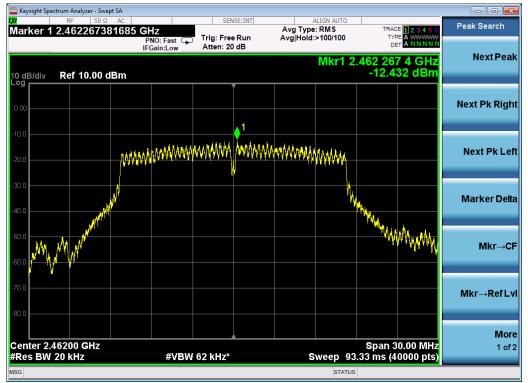




## TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

Page 46 of 85

# TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL







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

Page 47 of 85

### TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL







### TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

Page 48 of 85

### 802.11n 40 TEST RESULT

TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL







## TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

Page 49 of 85

#### Keysight Spectrum Analyzer - Swept SA - • **·**× SENSE:INT ALIGN AUTO Avg Type: RMS Avg|Hold:>100/100 AL AUTO TRACE 1 2 3 4 5 TYPE A WWWW DET A NNNN Peak Search Marker 1 2.455717842946 GHz Trig: Free Run Atten: 20 dB PNO: Fast IFGain:Low **Next Peak** Mkr1 2.455 717 8 GHz -16.287 dBm Ref 10.00 dBm 10 dB/div Log Next Pk Right **?** Next Pk Left Ч/ľ Marker Delta Welley History Mkr→CF Mkr→RefLvl More Center 2.45200 GHz #Res BW 20 kHz Span 60.00 MHz Sweep 186.7 ms (40000 pts) 1 of 2 #VBW 62 kHz\* STATUS

TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL



# 7. RADIATED EMISSION

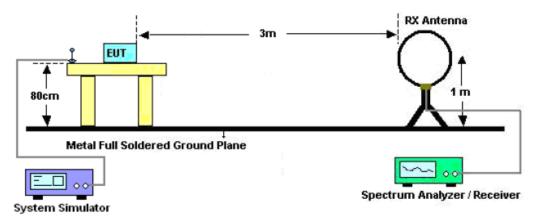
## 7.1. MEASUREMENT PROCEDURE

- 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 RBW and 3MHz VBW for peak reading. 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.

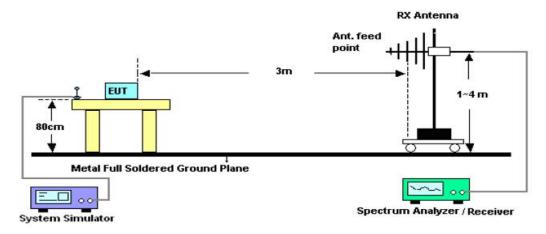


## 7.2. TEST SETUP

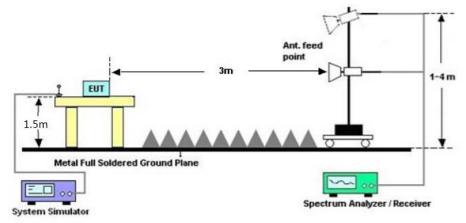
Radiated Emission Test-Setup Frequency Below 30MHz



### RADIATED EMISSION TEST SETUP 30MHz-1000MHz



# RADIATED EMISSION TEST SETUP ABOVE 1000MHz





## 7.3. 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.

# 7.4. TEST RESULT

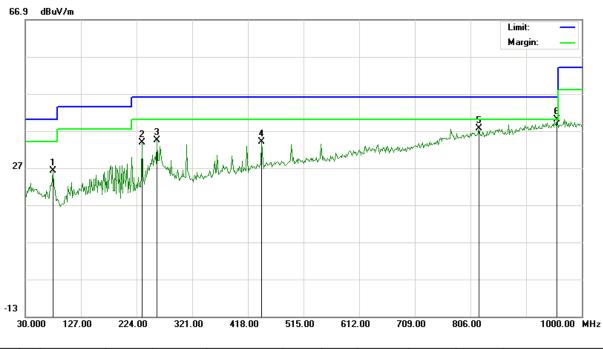
## **RADIATED EMISSION BELOW 30MHZ**

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



# **RADIATED EMISSION BELOW 1GHZ**

EUT	WIFI BLE Module	Model Name	C-8133U
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Horizontal

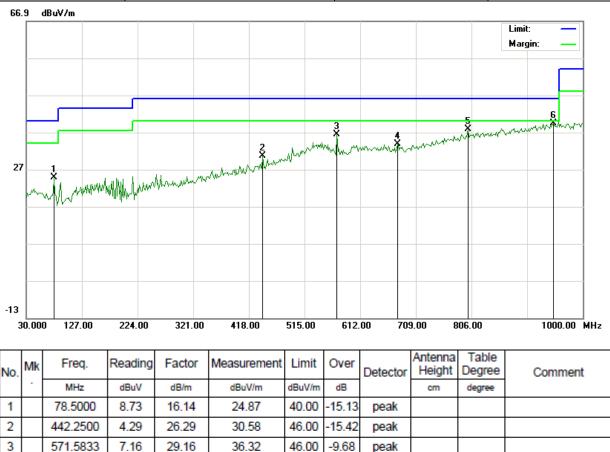


No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	•	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		78.5000	10.08	16.14	26.22	40.00	-13.78	peak			
2		233.7000	13.91	19.83	33.74	46.00	-12.26	peak			
3		259.5667	14.17	20.19	34.36	46.00	-11.64	peak			
4		442.2500	7.74	26.29	34.03	46.00	-11.97	peak			
5		820.5500	3.13	34.50	37.63	46.00	-8.37	peak			
6	*	956.3500	3.36	36.61	39.97	46.00	-6.03	peak			

### **RESULT: PASS**



EUT	WIFI BLE Module	Model Name	C-8133U
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Vertical



### **RESULT: PASS**

4

5

6

676.6667

799.5333

948.2667

2.87

3.67

2.85

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

31.02

34.12

36.51

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

33.89

37.79

39.36

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

46.00

46.00

46.00

-12.11

-8.21

-6.64

peak

peak

peak



# **RADIATED EMISSION ABOVE 1GHZ**

EUT	WIFI BLE Module	Model Name	C-8133U
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
4824.091	45.23	3.72	48.95	74	-25.05	peak
4824.097	40.67	3.72	44.39	54	-9.61	AVG
7236.101	43.34	8.15	51.49	74	-22.51	peak
7236.035	41.56	8.15	49.71	54	-4.29	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	WIFI BLE Module	Model Name	C-8133U
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	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value rype
4824.100	44.62	3.72	48.34	74	-25.66	peak
4824.034	40.58	3.72	44.3	54	-9.7	AVG
7236.053	43.47	8.15	51.62	74	-22.38	peak
7236.111	34.36	8.15	42.51	54	-11.49	AVG
Remark:						
actor = Ante	enna Factor + Ca	able Loss – I	Pre-amplifier.			



EUT	WIFI BLE Module	Model Name	C-8133U
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 Type	
4874.065	45.18	3.75	48.93	74	-25.07	peak	
4874.093	42.51	3.75	46.26	54	-7.74	AVG	
7311.074	42.29	8.16	50.45	74	-23.55	peak	
7311.106	38.46	8.16	46.62	54	-7.38	AVG	
Remark:							
Factor = Antenna Factor + Cable Loss – Pre-amplifier.							

EUT	WIFI BLE Module	Model Name	C-8133U
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	
4874.084	46.13	3.75	49.88	74	-24.12	peak	
4874.066	41.42	3.75	45.17	54	-8.83	AVG	
7311.065	44.61	8.16	52.77	74	-21.23	peak	
7311.045	40.25	8.16	48.41	54	-5.59	AVG	
Remark:							
Factor = Antenna Factor + Cable Loss – Pre-amplifier.							



EUT	WIFI BLE Module	Model Name	C-8133U
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)	(dBµV/m)	(dBµV/m)	(dB)	value Type	
4924.039	46.24	3.81	50.05	74	-23.95	peak	
4924.034	40.57	3.81	44.38	54	-9.62	AVG	
7386.118	46.38	8.19	54.57	74	-19.43	peak	
7386.090	40.96	8.19	49.15	54	-4.85	AVG	
Remark:						-	
Factor = Ante	enna Factor + Ca	able Loss – P	re-amplifier.				

EUT	WIFI BLE Module	Model Name	C-8133U
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	
4924.075	44.15	3.81	47.96	74	-26.04	peak	
4924.092	41.34	3.81	45.15	54	-8.85	AVG	
7386.081	43.72	8.19	51.91	74	-22.09	peak	
7386.080	38.98	8.19	47.17	54	-6.83	AVG	
Remark:							
Factor = Ante	enna Factor + C	able Loss – F	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.