FCC Test Report

Report No.: AGC07248170702FE02

FCC ID	:	TV7CPGI5ACD2ND
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	RouterBOARD cAP Gi-5acD2nD
BRAND NAME	:	RouterBOARD
MODEL NAME	:	cAP ac
CLIENT	:	Mikrotikk SIA
DATE OF ISSUE	:	Jul. 02, 2017
STANDARD(S) TEST PROCEDURE(S)	:	FCC Part 15.247 KDB 558074 D01 DTS Meas Guidance v04
REPORT VERSION	:	V1.0



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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Jul. 02, 2017	Valid	Original Report

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Applicant	Mikrotikls SIA			
Address	Pernavas 46 Riga Latvia LV-1009			
Manufacturer	Mikrotikls SIA			
Address	Pernavas 46 Riga Latvia LV-1009			
Product Designation	RouterBOARD cAP Gi-5acD2nD			
Brand Name	RouterBOARD			
Test Model	cAP ac			
Date of test	Jun 28, 2017 to Jul. 02, 2017			
Deviation	None			
Condition of Test Sample	Normal			
Test Result	Pass			
Report Template	AGCRT-US-BGN/RF			

1. VERIFICATION OF CONFORMITY

We hereby certify that:

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

Tested by

SNOW.Feng

Snow. Feng(Feng. Nianwei) Jul. 02, 2017

Reviewed by

BONG Sie

Bart Xie(Xie Xiaobin)) Jul. 02, 2017

Approved by

Solger Zhang(Zhang Hongyi) Authorized Officer

Jul. 02, 2017

2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

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

A major technical description of EUT is described as following

Operation Frequency	2.412 GHz~2.462GHz
Output Power	IEEE 802.11b: 15.09 dBm; IEEE 802.11g: 13.76 dBm; IEEE
	802.11n(20)mimo: 15.53 dBm; IEEE 802.11n(40)mimo: 14.99 dBm
Modulation	DSSS(DBPSK/DQPSK/CCK);OFDM(BPSK/QPSK/16-QAM/64-QAM)
Number of channels	11
Hardware Version	r3
Software Version	6.38.5
Antenna Designation	Internal Antenna
Number of transmit	2(802.11b/g/n used two antennas,but only 802.11n suport mimo)
chain	
Antenna Gain	2dBi
Power Supply	DC 24V

2.2. TABLE OF CARRIER FREQUENCYS

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

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

For 40MHZ bandwidth system use Channel 3 to Channel 9

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

2.3. IEEE 802.11N MODULATION SCHEME

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

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

This submittal(s) (test report) is intended for **FCC ID: TV7CPGI5ACD2ND** filing to comply with the FCC Part 15 requirements.

2.5. TEST METHODOLOGY

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

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

2.6. SPECIAL ACCESSORIES

Refer to section 5.2.

2.7. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

3. MEASUREMENT UNCERTAINTY

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

4. DESCRIPTION OF TEST MODES

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

Transmit by 802.11b with Date rate (1/2/5.5/11)

Transmit by 802.11g with Date rate (6/9/12/18/24/36/48/54)

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

Transmit by 802.11n (40MHz) with Date rate (13.5/27/40.5/54.0/81.0/108.0/121.5/135.0)

Note:

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

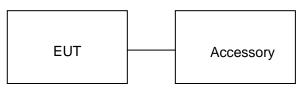
2. All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.

3. For Radiated Emission, 3axis were chosen for testing for each applicable mode.

5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Configure:



5.2. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	RouterBOARD	cAP ac	TV7CPGI5ACD2ND	EUT
2	PC	SONY	E1412AYCW	Support
3	Adapter	MLF-A00122400380U0141	Input: AC 100-240V, 50/60Hz	Support
4	PC adapter	SONY	A13-040A3A	Support

5.3. SUMMARY OF TEST RESULTS

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

6. TEST FACILITY

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

ALL TEST EQUIPMENT LIST

Radiated Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	July 5, 2016	July 4, 2017
Trilog Broadband Antenna (25M-1GHz)	SCHWARZBECK	VULB9160	9160-3355	July 5, 2016	July 4, 2017
Signal Amplifier	SCHWARZBECK	BBV 9475	9745-0013	July 5, 2016	July 4, 2017
RF Cable	SCHWARZBECK	AK9515E	96221	July 5, 2016	July 4, 2017
3m Anechoic Chamber	CHENGYU	966	PTS-001	July 5, 2016	July 4, 2017
MULTI-DEVICE Positioning Controller	Max-Full	MF-7802	MF780208339	N/A	N/A
Active loop antenna (9K-30MHz)	Schwarzbeck	FMZB1519	1519-038	June 6, 2017	June 5, 2018
Spectrum analyzer	Agilent	E4407B	MY46185649	June 6, 2017	June 5, 2018
Power Sensor	Agilent	U2021XA	MY55050474	June 6, 2017	June 5, 2018
Horn Antenna (1G-18GHz)	SCHWARZBECK	BBHA9120D	9120D-1246	July 11, 2016	July 10, 2017
Horn Ant (18G-40GHz)	Schwarzbeck	BBHA 9170	9170-181	June 6, 2017	June 5, 2018

Conducted Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	July 5, 2016	July 4, 2017
Artificial Mains Network	Narda	L2-16B	000WX31025	July 7, 2016	July 6, 2017
Artificial Mains Network (AUX)	Narda	L2-16B	000WX31026	July 7, 2016	July 6, 2017
RF Cable	SCHWARZBECK	AK9515E	96222	July 5, 2016	July 4, 2017
Shielded Room	CHENGYU	843	PTS-002	June 6, 2017	June 5, 2018

7. OUTPUT POWER

7.1. MEASUREMENT PROCEDURE

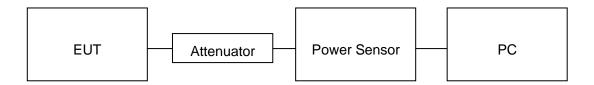
For average power test:

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

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

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

AVERAGE POWER SETUP



7.3. LIMITS AND MEASUREMENT RESULT

TEST ITEM	OUTPUT POWER				
TEST MODE	802.11b with data rate 1	802.11b with data rate 1			
Ant0:					
Frequency (GHz)	Average Power (dBm) (dBm) Pass or Fail				
2.412	14.99	30	Pass		
2.437	15.09	30	Pass		
2.462	14.93	30	Pass		

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	14.24	30	Pass
2.437	14.26	30	Pass
2.462	14.18	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	13.54	30	Pass
2.437	13.68	30	Pass
2.462	13.76	30	Pass

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	13.18	30	Pass
2.437	13.13	30	Pass
2.462	13.26	30	Pass

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

Port	Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
Ant0	2.412	12.39	30	Pass
	2.437	12.48	30	Pass
	2.462	12.36	30	Pass
Ant1	2.412	12.58	30	Pass
	2.437	12.56	30	Pass
	2.462	12.44	30	Pass
Sum	2.412	15.50	30	Pass
	2.437	15.53	30	Pass
	2.462	15.41	30	Pass

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

Port	Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
Ant0	2.412	12.18	30	Pass
	2.437	12.03	30	Pass
	2.462	12.06	30	Pass
Ant1	2.412	11.76	30	Pass
	2.437	11.78	30	Pass
	2.462	11.83	30	Pass
Sum	2.412	14.99	30	Pass
	2.437	14.92	30	Pass
	2.462	14.96	30	Pass

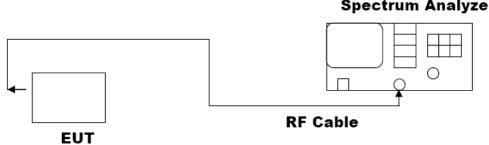
8.6 DB BANDWIDTH

8.1. MEASUREMENT PROCEDURE

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

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

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



Spectrum Analyzer

8.3. LIMITS AND MEASUREMENT RESULTS

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

Ant0:

LIMITS AND MEASUREMENT RESULT				
	Applicable Limits			
Applicable Limits	Test Data (MHz) Criteria			
>500KHZ	Low Channel	10.10	PASS	
	Middle Channel	10.11	PASS	
	High Channel	10.10	PASS	

LIMITS AND MEASUREMENT RESULT				
	Applicable Limits			
Applicable Limits	Test Data (MHz) Criteria			
>500KHZ	Low Channel	10.17	PASS	
	Middle Channel	10.25	PASS	
	High Channel	10.20	PASS	

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

LIMITS AND MEASUREMENT RESULT				
	Applicable Limits			
Applicable Limits	Test Data (MHz) Criteria			
>500KHZ	Low Channel	15.41	PASS	
	Middle Channel	15.33	PASS	
	High Channel	15.70	PASS	

LIMITS AND MEASUREMENT RESULT				
		Applicable Limits		
Applicable Limits	Test Data (MHz) Criteria			
>500KHZ	Low Channel	16.39	PASS	
	Middle Channel	16.45	PASS	
	High Channel	14.50	PASS	

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

LIMITS AND MEASUREMENT RESULT				
Anniisekie Limite	Applicable Limits			
Applicable Limits	Test Data (MHz) Criteria			
>500KHZ	Low Channel	15.69	PASS	
	Middle Channel	15.73	PASS	
	High Channel	16.00	PASS	

LIMITS AND MEASUREMENT RESULT				
	Applicable Limits			
Applicable Limits	Test Data (MHz) Criteria			
>500KHZ	Low Channel	16.37	PASS	
	Middle Channel	17.69	PASS	
	High Channel	16.38	PASS	

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

LIMITS AND MEASUREMENT RESULT				
Appliachla Limita	Applicable Limits			
Applicable Limits	Test Data (MHz) Criteria			
>500KHZ	Low Channel	32.55	PASS	
	Middle Channel	35.13	PASS	
	High Channel	31.33	PASS	

LIMITS AND MEASUREMENT RESULT				
	Applicable Limits			
Applicable Limits	Test Data (MHz) Criteria			
>500KHZ	Low Channel	36.24	PASS	
	Middle Channel	36.34	PASS	
	High Channel	33.20	PASS	

802.11b TEST RESULT-Ant0:

- Swept SA d X Keysight Spectrum 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 Ģ #IFGain:Low Radio Device: BTS 2.41299 GHz 0.82012 dBm Mkr1 Ref 20.00 dBm 15 dB/div .og **Center Freq** 2.412000000 GHz wytherport Manual way of ųΛ: Center 2.412 GHz #Res BW 100 kHz Span 30 MHz Sweep 3.733 ms **CF** Step #VBW 300 kHz 3.000000 MHz Auto Man **Total Power** 17.0 dBm **Occupied Bandwidth** 14.843 MHz **Freq Offset** 0 Hz Transmit Freq Error 474.71 kHz % of OBW Power 99.00 % x dB Bandwidth 10.10 MHz x dB -6.00 dB STATUS

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

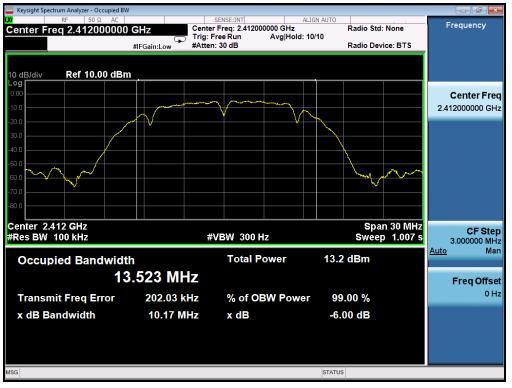


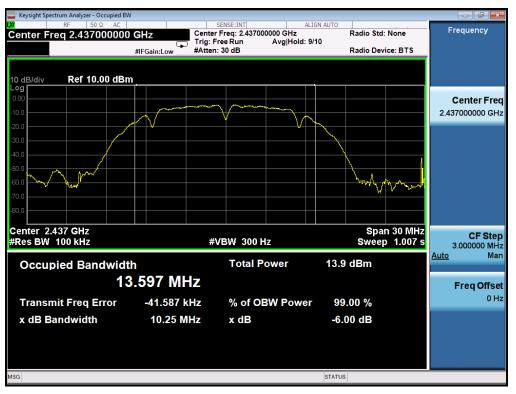


TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

802.11b TEST RESULT-Ant1:

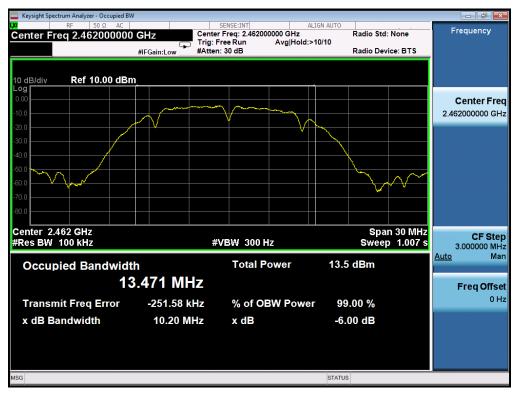
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL





TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



802.11g TEST RESULT-Ant0:



TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

🔤 Keysight Spectrum Analyzer - Swept SA 🚽						
Center Freq 2.43700000		SENSE:INT Center Freq: 2.43700	ALIGN A	AUTO Radio Std	None	Frequency
Center Freq 2.437000000	- -	Trig: Free Run	Avg Hold:>10/10	0		
	#IFGain:Low	#Atten: 30 dB		Radio Dev		
			I	Mkr1 2.439	949 GHz 80 dBm	
15 dB/div Ref 20.00 dBr	<u>n</u>		1	0.002		
5.00		· · · · · · · · · · · · · · · · · · ·				Center Freq
-10.0	ben have have have	hand have produced	mark marker and	hy		2.437000000 GHz
-25.0				and the second s		
-25.0 -40.0 When when when when when when when when w					montere	
-55.0						
-70.0						
-85.0						
-100						
-115						
Center 2.437 GHz		/// () () () () () () () () () () () () () ()			n 30 MHz	CF Step
#Res BW 100 kHz		#VBW 3001	KHZ	Sweep	3.733 ms	3.000000 MHz
Occupied Bandwid	th	Total P	ower	17.7 dBm		<u>Auto</u> Man
		-				
	6.402 MH	Z				Freq Offset
Transmit Freq Error	-12.405 kl	Hz % of O	BW Power	99.00 %		0 Hz
x dB Bandwidth	15.33 MI	Hz xdB		-6.00 dB		
MSG				STATUS		

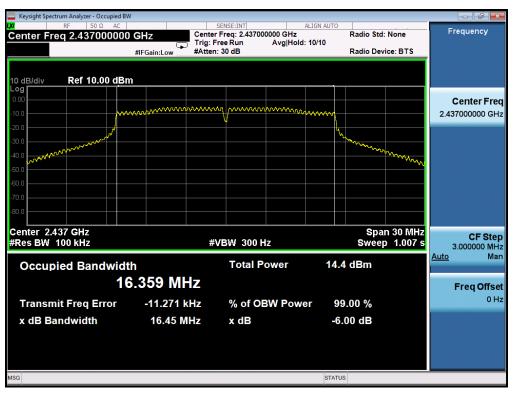


TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

802.11g TEST RESULT-Ant1:

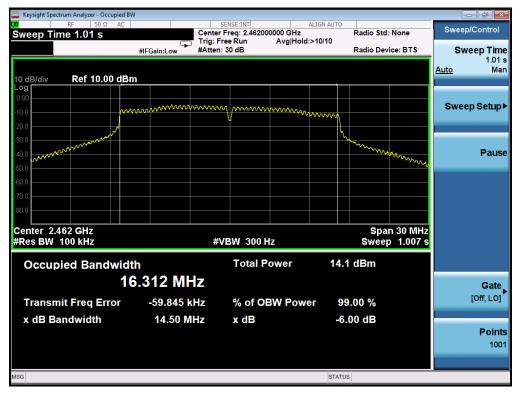
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

Keysight Spectrum Analyzer - Occupier				T		
Center Freq 2.4120000	00 GHz	SENSE:INT Center Freq: 2.412000		Radio Std: N	None	Frequency
		Trig: Free Run #Atten: 30 dB	Avg Hold: 10/10	Radio Devic	e: BTS	
	#II Galli.Low					
10 dB/div Ref 10.00 d	Bm					
Log						
0.00			0000000			Center Freq
-10.0	www.www.www.www.	······				2.412000000 GHz
-20.0				h		
-30.0				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
~~~~~~					www.	
-50.0						
-60.0						
-70.0						
-80.0						
Center 2.412 GHz			1	Span	30 MHz	05.04+**
#Res BW 100 kHz		#VBW 300 Hz	2	Sweep		CF Step 3.000000 MHz
	141	Total Po		3.8 dBm	<u> </u>	Auto Man
Occupied Bandwi			wer is	0.0 UBIII		
	16.333 MH	Ζ				Freq Offset
Transmit Freq Error	41.838 kH	z % of OB	W Power	99.00 %		0 Hz
x dB Bandwidth	16.39 MH			6.00 dB		
	10.39 MH	2 X UB	-	0.00 QB		
MSG			STA	THE		
			STA	105		



### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

#### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



# 802.11n (20) TEST RESULT-Ant0:

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

Keysight Spectrum Analyzer - Swept SA			1		- 7 🔀
Center Freq 2.41200000		SENSE:INT er Freq: 2.412000000 GHz	ALIGN AUTO Radio St	d: None	Frequency
	Trig:	Free Run Avg Hold n: 30 dB		vice: BTS	
	#IFGain:Low #Atte		Mkr1 2.41		
15 dB/div Ref 20.00 dB	m			299 dBm	
Log 5.00					Comton Error
-10.0	Annon Mannan	my manhandradha	mmm		Center Freq 2.412000000 GHz
		Ĭ	m.		2.412000000 GH2
-25.0			- Andrew	manne	
-55.0					
-70.0					
-85.0					
-100					
-100					
-110					
Center 2.412 GHz				an 30 MHz	CF Step
#Res BW 100 kHz	#	¥VBW 300 kHz	Sweep	3.733 ms	3.000000 MHz
Occupied Bandwid	th	Total Power	16.6 dBm		<u>Auto</u> Man
	7.533 MHz				
	1.000 MINZ				Freq Offset
Transmit Freq Error	55.141 kHz	% of OBW Pow	ver 99.00 %		0 Hz
x dB Bandwidth	15.69 MHz	x dB	-6.00 dB		
MSG			STATUS		

## TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

🔤 Keysight Spectru	um Analyzer - Swep									
Center Fre		AC   DOOD GHz		Center Fr	NSE:INT req: 2.43700	0000 GHz	ALIGN AUTO	Radio Std	: None	Frequency
		#IFGai	÷	Trig: Free #Atten: 3		Avg Hold	:>10/10	Radio Dev	vice: BTS	
		<i>"</i>					Mki	1 2 438	326 GHz	
15 dB/div	Ref 20.00	dBm							57 dBm	
Log 5.00					<b>≬</b> 1					Center Fre
-10.0		m	man	monting	mm	mont	man			2.437000000 GH
-25.0	a sull locarment							Manager .		
-40.0 Manadena	^م ەرىلىپىيەمەلىلىيەدىرىچىنې								www.white	
-55.0										
-70.0										
-85.0										
-100										
-115										
Center 2.43									n 30 MHz	CF Ste
#Res BW 1	00 kHz			#VE	3W 300 k	Hz		Sweep	3.733 ms	3.000000 MH
Occupi	ed Bandv	vidth			Total P	ower	17.	2 dBm		<u>Auto</u> Ma
		17.57	7 МН	7						<b>Face a 0</b> ffe
										Freq Offs
Transmi	t Freq Erro	or '	1.774 k⊦	IZ	% of O	BW Pow	er 99	9.00 %		01
x dB Bar	ndwidth	1	5.73 MH	IZ	x dB		-6	.00 dB		
MSG							STATU	c		
Mod							STATU	3		

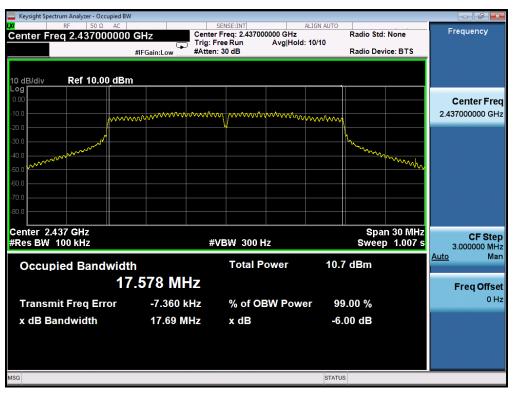


## TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

#### 802.11n20 TEST RESULT-Ant1:

#### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

Even Severation Events Interesting Events Interesting Events Interesting Events Interesting Interestin	BW				
Center Freg 2.41200000	0 GHz Cente	SENSE:INT Freq: 2.412000000 GHz	ALIGN AUTO	Radio Std: None	Frequency
	Trig:	Free Run Avg Ho n:30 dB	ld: 10/10	Radio Device: BT	
	#IFGain:Low #Atte	n. 30 ab		Radio Device. B1	3
10 dB/div Ref 10.00 dE	100				
0.00					Center Freq
-10.0	Million	w provident	www.		2.412000000 GHz
-20.0	///////				
-30.0				hours -	
-40.0				www.www.www	
-50.0					~~~~
-60.0					
-70.0					
-80.0					
Center 2.412 GHz				Chan 20 I	111-
#Res BW 100 kHz	#	≠VBW 300 Hz		Span 30 M Sweep 1.00	Cr Step
					Auto Man
Occupied Bandwic	lth	Total Power	10.0	dBm	
1	7.533 MHz				Freq Offset
					0 Hz
Transmit Freq Error	48.569 kHz	% of OBW Pov	ver 99	.00 %	
x dB Bandwidth	16.37 MHz	x dB	-6.	00 dB	
MSG			STATUS	6	



#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

#### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

Keysight Spectrum Analyzer - Occupied B	W	05105 117		1		
Center Freq 2.46200000	Trig	SENSE:INT ter Freq: 2.462000000 G : Free Run Avg en: 30 dB	ALIGN AUTO Hz Hold:>10/10	Radio Std: No Radio Device		Frequency
10 dB/div Ref 10.00 dB	n					
0.00	wwwwwwww	wy potentia	WWWWWWWW			Center Fred 2.462000000 GHz
-30.0				the second		
-40.0					www	
-70.0						
Center 2.462 GHz #Res BW 100 kHz		#VBW 300 Hz		Span ( Sweep	30 MHz 1.007 s	CF Stej 3.000000 MH
Occupied Bandwid		Total Power	10.4	l dBm	A	<u>uto</u> Mar
	7.505 MHz -71.564 kHz	% of OBW P		0.00 %		Freq Offse 0 H
Transmit Freq Error x dB Bandwidth	-71.564 KHZ 16.38 MHz	x dB		00 dB		
ISG			STATUS	5		

#### 802.11n (40) TEST RESULT



#### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

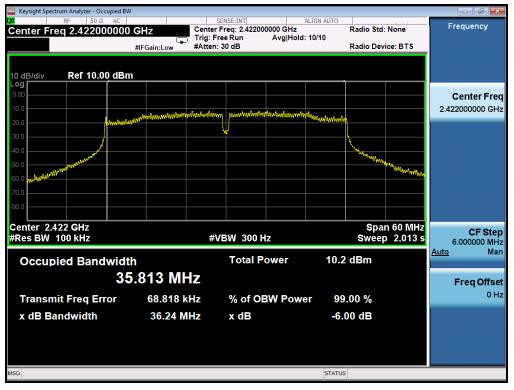
Keysight Spectrum Ar						1			×
Center Freq 2	50 Ω AC		SENSE:INT Center Freq: 2.43		ALIGN AUTO	Radio Std	: None	Frequenc	У
		#IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Hold	d:>10/10	Radio Dev	rice: BTS		
		#II Gall.Low			Mkr		24 GHz		
	ef 20.00 dl	Bm					17 dBm		
Log 5.00		1						Center	Frea
-10.0		and and materia and produced and	polimboularmy possibilities	nhatantaataanah	menterstration	1		2.437000000	
-25.0			¥			( \			
-40.0	Wandan					Walkshaward	Mur.		
-55.0 w-twww.							whether what we		
-70.0									
-85.0									
-100									
-115									
Center 2.437 0	GHz					Sna	n 60 MHz		
#Res BW 100			#VBW 30	) kHz			7.467 ms	CF 6.000000	Step
				D	40.0			<u>Auto</u>	Man
Occupied				Power	10.0	dBm			
		35.898 MH	Z					Freq O	ffset
Transmit F	req Error	-1.110	(Hz % of	OBW Pow	er 99	.00 %			0 Hz
x dB Bandy	width	35.13 N	IHz x dB		-6.	00 dB			
MSG					STATUS				
									_

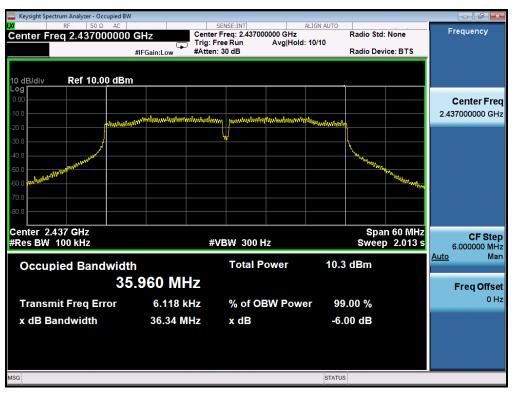


## TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

#### 802.11n(40) TEST RESULT-Ant1:

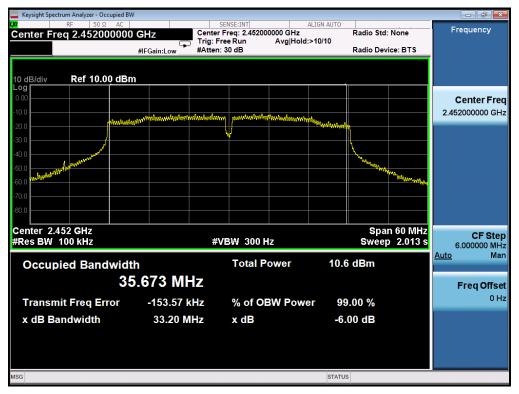
#### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL





#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

#### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



# 9. CONDUCTED SPURIOUS EMISSION

# 9.1. MEASUREMENT PROCEDURE

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

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

The same as described in section 8.2.

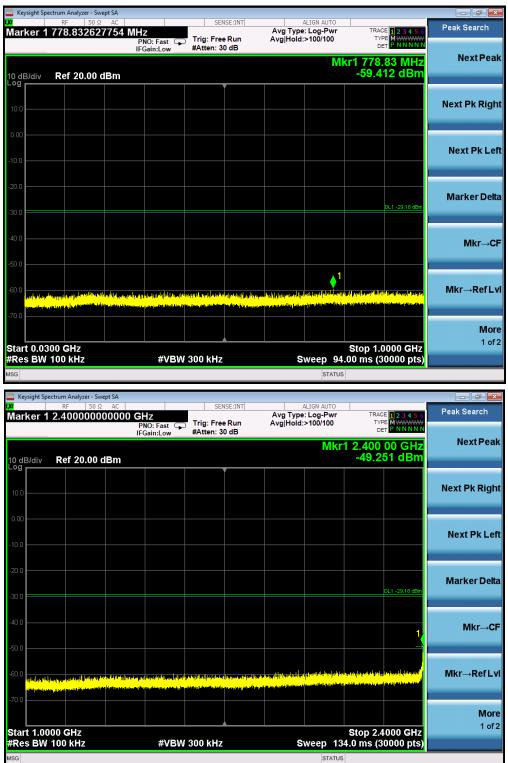
# 9.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.

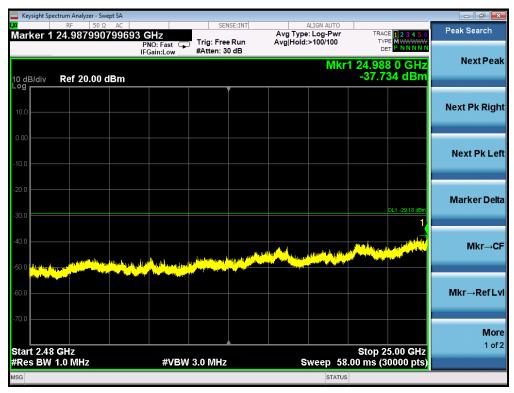
# 9.4. LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT							
Applicable Limite	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. In addition, radiation emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in§15.209(a))	At least -30dBc than the limit Specified on the TOP Channel	PASS					

Note: Two transmit chains had been tested, the chain 0 was the worst case and record in the test report. The spurious emission at chain 0 is more than 3dB below the limits, so the MIMO results for the spurious emis sions are comply with the requirement.



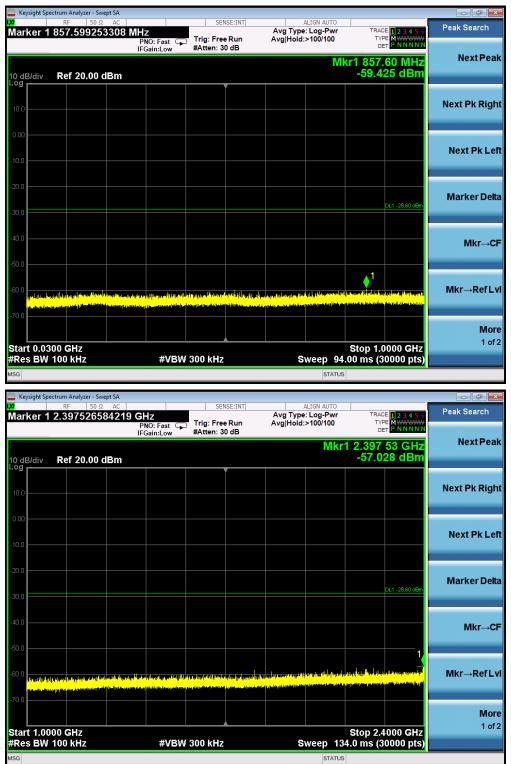
## TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF 802.11b FOR MODULATION IN LOW CHANNEL



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



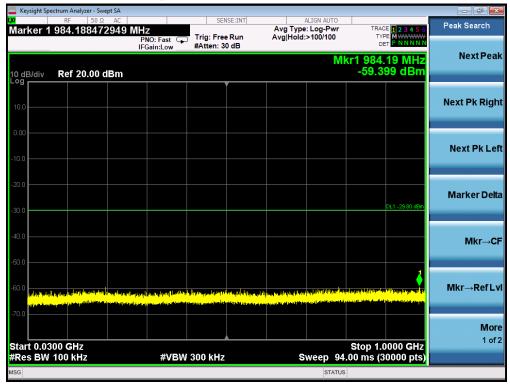
Keysight Spectrum Analyzer - Swept SA           RF         50 Ω         AC		SENSE:INT	ALIGN AUTO		Peak Search
larker 1 2.39901996733	PNO: Fast 😱	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWWW DET P N N N N N	Feak Search
	IFGain:Low	#Atten: 30 dB	Mkr	1 2.399 02 GHz	NextPea
0 dB/div Ref 20.00 dBm				-55.035 dBm	
10.0					Next Pk Rig
0.00					
					Next Pk Le
10.0					
20.0					Marker De
60.0				DL1 -28.48 dBm	indikei De
40.0					Mkr→C
50.0					
20.0					Mkr→RefL
50.0 Refer filment free of a period of a second		na na sangan pangan pangan Pangan pangan			
70.0					
					<b>Mo</b> 1 o
tart 1.0000 GHz				Stop 2 4000 GHz	
Res BW 100 kHz	#VBW	300 kHz	Sweep 13	Stop 2.4000 GHz 4.0 ms (30000 pts)	
	#VBW	300 kHz	Sweep 13 STATUS	4.0 ms (30000 pts)	
Res BW 100 kHz	#VBW		STATUS	4.0 ms (30000 pts)	
Res BW 100 kHz           SG           Keysight Spectrum Analyzer - Swept SA           RF         50 Ω	483 GHz	SENSE:INT	STATUS ALIGN AUTO Avg Type: Log-Pwr	4.0 ms (30000 pts)	다. 이미
Res BW 100 kHz           SG           Keysight Spectrum Analyzer - Swept SA           RF         50 Ω		SENSE:INT	STATUS ALIGN AUTO Avg Type: Log-Pwr AvgjHold:>100/100	4.0 ms (30000 pts)	Peak Search
Res BW 100 kHz ^{3G} , Keysight Spectrum Analyzer - Swept SA RF 50.0. AC larker 1 24.9797344744	183 GHz PNO: Fast IFGain:Low	SENSE:INT	STATUS ALIGN AUTO Avg Type: Log-Pwr AvgjHold:>100/100	4.0 ms (30000 pts)	Peak Search
Res BW 100 kHz sg keysight Spectrum Ann/yzer - Swept SA RF 50.0. AC larker 1 24.9797344744	183 GHz PNO: Fast IFGain:Low	SENSE:INT	STATUS ALIGN AUTO Avg Type: Log-Pwr AvgjHold:>100/100	4.0 ms (30000 pts)	Peak Search
Res BW 100 kHz ag Keysight Spectrum Analyzer - Swept SA RE 50 D AC larker 1 24.9797344744 0 dB/dlv Ref 20.00 dBm	183 GHz PNO: Fast IFGain:Low	SENSE:INT	STATUS ALIGN AUTO Avg Type: Log-Pwr AvgjHold:>100/100	4.0 ms (30000 pts)	Peak Search NextPea
Res BW 100 kHz           3G	183 GHz PNO: Fast IFGain:Low	SENSE:INT	STATUS ALIGN AUTO Avg Type: Log-Pwr AvgjHold:>100/100	4.0 ms (30000 pts)	Peak Search NextPea
Res BW 100 kHz           3G	183 GHz PNO: Fast IFGain:Low	SENSE:INT	STATUS ALIGN AUTO Avg Type: Log-Pwr AvgjHold:>100/100	4.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig
Res BW 100 kHz           3G	183 GHz PNO: Fast IFGain:Low	SENSE:INT	STATUS ALIGN AUTO Avg Type: Log-Pwr AvgjHold:>100/100	4.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig
Res BW 100 kHz sg keysight Spectrum Analyzer - Swept SA RF 50.0. AC larker 1 24.9797344744	183 GHz PNO: Fast IFGain:Low	SENSE:INT	STATUS ALIGN AUTO Avg Type: Log-Pwr AvgjHold:>100/100	4.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig
Res BW 100 kHz           sg           sg           keysight Spectrum Anelyzer - Swept SA           RF         50 Q           darker 1 24.9797344744           0 dB/dlv         Ref 20.00 dBm           00 dB/dlv         Ref 20.00 dBm           00 dB/dlv         Ref 20.00 dBm	183 GHz PNO: Fast IFGain:Low	SENSE:INT	STATUS ALIGN AUTO Avg Type: Log-Pwr AvgjHold:>100/100	4.0 ms (30000 pts)	and the second s
Res BW 100 kHz           sg           sg           keysight Spectrum Anelyzer - Swept SA           RF         50 Q           darker 1 24.9797344744           0 dB/div         Ref 20.00 dBm           00         000	183 GHz PNO: Fast IFGain:Low	SENSE:INT	STATUS ALIGN AUTO Avg Type: Log-Pwr AvgjHold:>100/100	4.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Lu
Res BW 100 kHz           3G           Keysight Spectrum Analyzer - Swept SA           RF         50 0 AC           Iarker 1 24.979734474           0 dB/dlv         Ref 20.00 dBm           9         0           100         0           100         0           100         0	183 GHz PNO: Fast IFGain:Low	SENSE:INT	ALISN AUTO Avg Type: Log-Pwr Avg]Hold:>100/100 MKr	4.0 ms (30000 pts)	Peak Search Next Pe Next Pk Rig Next Pk Li Marker De
Res BW 100 kHz           3G           Keysight Spectrum Analyzer - Swept SA           RF         50 0 AC           Iarker 1 24.979734474           0 dB/dlv         Ref 20.00 dBm           9         0           10.0         0           10.0         0           10.0         0           10.0         0           10.0         0           10.0         0           10.0         0           10.0         0           10.0         0	483 GHz PNO: Fast IFGain:Low	SENSE:INT	ALISN AUTO Avg Type: Log-Pwr Avg]Hold:>100/100 MKr	4.0 ms (30000 pts)	Peak Search Next Pe Next Pk Rig Next Pk Lu Marker De
Res BW 100 kHz           3G           Keysight Spectrum Analyzer - Swept SA           RF         50 0 AC           Iarker 1 24.979734474           0 dB/div         Ref 20.00 dBm           9         0           10.0         0           10.0         0           10.0         0           10.0         0	483 GHz PNO: Fast IFGain:Low	SENSE:INT	ALISN AUTO Avg Type: Log-Pwr Avg]Hold:>100/100 MKr	4.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Lu
Res BW 100 kHz           3G           Keysight Spectrum Analyzer - Swept SA           RF         50 0 AC           Iarker 1 24.979734474           0 dB/dlv         Ref 20.00 dBm           9         0           10.0         0           10.0         0           10.0         0           10.0         0           10.0         0           10.0         0           10.0         0           10.0         0           10.0         0	483 GHz PNO: Fast IFGain:Low	SENSE:INT	ALISN AUTO Avg Type: Log-Pwr Avg]Hold:>100/100 MKr	4.0 ms (30000 pts)	Peak Search Next Pe Next Pk Rig Next Pk Li Marker De Mkr0
Res BW 100 kHz           36           Keysight Spectrum Analyzer - Swept SA           RF         50.00 AC           Iarker 1 24.979734474:           0 dB/div         Ref 20.00 dBm	483 GHz PNO: Fast IFGain:Low	SENSE:INT	ALISN AUTO Avg Type: Log-Pwr Avg]Hold:>100/100 MKr	4.0 ms (30000 pts)	Peak Search Next Per Next Pk Rig Next Pk Lu Marker De Mkr0
Res BW 100 kHz           3G           Keysight Spectrum Analyzer - Swept SA           RE         50 D AC           Iarker 1 24.9797344744           0 dB/div         Ref 20.00 dBm           0 dB/div         Ref 20.00 dBm	483 GHz PNO: Fast IFGain:Low	SENSE:INT	ALISN AUTO Avg Type: Log-Pwr Avg]Hold:>100/100 MKr	4.0 ms (30000 pts)	Peak Search Next Pe Next Pk Rig Next Pk Li Marker De Mkr→Ref L Mkr→Ref L
Res BW 100 kHz           33           Keysight Spectrum Analyzer - Swept SA           RF         50 D AC           Iarker 1 24.9797344744           0 dB/dlv         Ref 20.00 dBm	483 GHz PNO: Fast IFGaintLow	SENSE:INT	Avg Type: Log-Pwr Avg Type: Log-Pwr AvgiHold:>100/100 Mkr	4.0 ms (30000 pts)	Peak Search Next Pe Next Pk Rig Next Pk Lu Marker De



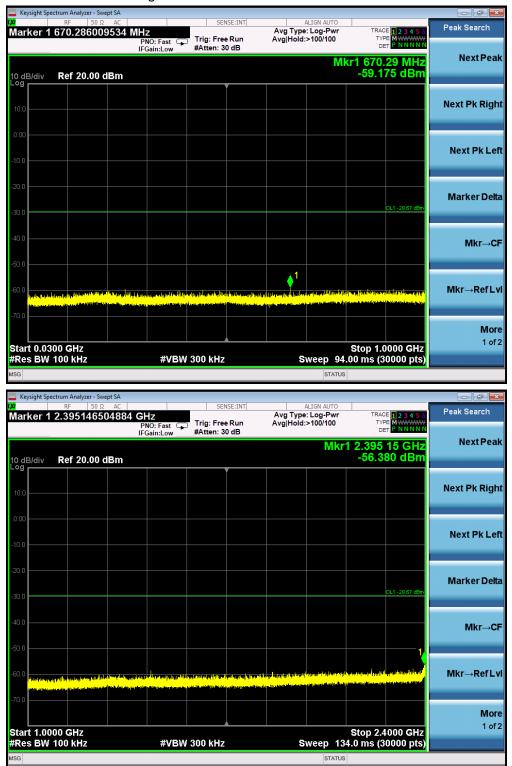
# TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11b FOR MODULATION IN HIGH CHANNEL



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



Keysight Spectrum Analyzer - Swept SA RF 50 Ω AC		SENSE:INT	ALIGN AUTO		Peak Search
Marker 1 2.3999066635	55 GHz PNO: Fast G IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWWW DET P N N N N N	T eak Search
	IFGaIN:LOW	#Atten: 00 ub	Mkr1	2.399 91 GHz	NextPea
0 dB/div Ref 20.00 dBm	1			-32.190 dBm	
					Next Pk Rig
10.0					J
0.00					
10.0					Next Pk Le
20.0					
20.0				1	Marker De
30.0				DL1 -29.80 d →	
40.0					Mkr→0
50.0					
				na na shikin dala danili bana pilatili na gana kana shu manga kata di ka	Mkr→RefL
70.0					
					Мо
					1 0
Start 1.0000 GHz Res BW 100 kHz	#VBM	V 300 kHz	Sweep 134	Stop 2.4000 GHz .0 ms (30000 pts)	1 of
	#VBM	V 300 kHz	Sweep 134 status	Stop 2.4000 GHz I.0 ms (30000 pts)	1 of
Res BW 100 KHz SG Keysight Spectrum Analyzer - Swept SA			STATUS	Stop 2.4000 GHz I.0 ms (30000 pts)	1 of
Res BW 100 KHz sg Keysight Spectrum Analyzer - Swept SA RF 50 Ω AC	800 GHz	SENSE:INT		LO ms (30000 pts)	
Res BW 100 kHz sg keysight Spectrum Analyzer - Swept SA RF 50 Ω AC		SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hoid:>100/100	LO ms (30000 pts)	Peak Search
Res BW 100 kHz           3G           Keysight Spectrum Analyzer - Swept SA           RF         50 Ω           Iarker 1 24.404794009           0 dB/div         Ref 20.00 dBm	800 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hoid:>100/100	LO ms (30000 pts)	Peak Search
Res BW 100 kHz           sg           keysight Spectrum Analyzer - Swept SA           RF         50 Ω Acc           larker 1 24.404794009           0 dB/div         Ref 20.00 dBm	800 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hoid:>100/100	2.0 ms (30000 pts)	Peak Search Next Pea
Res BW 100 kHz sg keysight Spectrum Analyzer - Swept SA RF 50 Ω AC larker 1 24.404794009 0 dB/div Ref 20.00 dBm	800 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hoid:>100/100	2.0 ms (30000 pts)	Peak Search Next Pea
Res BW 100 kHz s a keysight Spectrum Analyzer - Swept SA RF 50 Ω AC Narker 1 24.404794009 0 dB/div Ref 20.00 dBm	800 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hoid:>100/100	2.0 ms (30000 pts)	Peak Search Next Pea
Res BW 100 kHz           sa           keysight Spectrum Analyzer - Swept SA           RF         50 Ω AC           Marker 1 24.404794009           0 dB/div         Ref 20.00 dBm           00 dB/div         Ref 20.00 dBm	800 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hoid:>100/100	2.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig
Res BW 100 kHz           sa           keysight Spectrum Analyzer - Swept SA           RF         50 Ω AC           Marker 1 24.404794009           0 dB/div         Ref 20.00 dBm           00 dB/div         Ref 20.00 dBm	800 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hoid:>100/100	2.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig
Res BW 100 kHz           sa           keysight Spectrum Analyzer - Swept SA           RF         50 Ω           Aarker 1 24.404794009           0 dB/div         Ref 20.00 dBm           00 dB/div         Ref 20.00 dBm	800 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hoid:>100/100	2.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Lo
Res BW 100 kHz           sa           keysight Spectrum Analyzer - Swept SA           RF         50 Ω           Aarker 1 24.404794009           0 dB/div         Ref 20.00 dBm           00 dB/div         Ref 20.00 dBm           00 dB/div         Ref 20.00 dBm	800 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hoid:>100/100	DL1 -29.80 @Em	Peak Search Next Pea Next Pk Rig Next Pk Lo
Res BW 100 kHz           sq           Keysight Spectrum Analyzer - Swept SA           RF         50 Ω           Jarker 1 24.404794009           0 dB/div         Ref 20.00 dBm           9         0           10.0         0           0.00         0           10.0         0           10.0         0           10.0         0	800 GHz PNO: Fast IFGain:Low	SENSE:INT	Avg Type: Log-Pwr Avg Hold:>100/100	.0 ms (30000 pts) TRACE 1 2 3 4 5 5 TYPE MWWWWWWW DET P NNNNN 24.404 8 GHz -37.898 dBm DL1 -29 80 d€m 01 -29 80 d€m	Peak Search Next Pea Next Pk Rig Next Pk Lo Marker De
Res BW 100 kHz           SG           Keysight Spectrum Analyzer - Swept SA           RF         50 Ω AC           Iarker 1 24.404794009           0 dB/div         Ref 20.00 dBm           0 0 dB/div         Ref 20.00 dBm	800 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg[Hold:>100/100 Mkr1	DL1 -29.80 @Em	Peak Search Next Pea Next Pk Rig Next Pk Lo Marker De
Res BW 100 kHz sg keysight Spectrum Analyzer - Swept SA RF 50 Ω AC Aarker 1 24.404794009	800 GHz PNO: Fast IFGain:Low	SENSE:INT	Avg Type: Log-Pwr Avg Hold:>100/100	.0 ms (30000 pts) TRACE 1 2 3 4 5 5 TYPE MWWWWWWW DET P NNNNN 24.404 8 GHz -37.898 dBm DL1 -29 80 d€m 01 -29 80 d€m	Peak Search Next Pea Next Pk Rig Next Pk Lo Marker De
Res BW 100 kHz           SG           Keysight Spectrum Analyzer - Swept SA           RF         50 Ω AC           Marker 1 24.404794009           0 dB/div         Ref 20.00 dBm           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0	800 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg[Hold:>100/100 Mkr1	.0 ms (30000 pts) TRACE 1 2 3 4 5 5 TYPE MWWWWWWW DET P NNNNN 24.404 8 GHz -37.898 dBm DL1 -29 80 d€m 01 -29 80 d€m	Peak Search Next Pea Next Pk Rig Next Pk Lo Marker De
Res BW 100 kHz           SG           ■ Keysight Spectrum Analyzer - Swept SA           RF          50 Ω           Aarker 1 24.404794009           0 dB/div         Ref 20.00 dBm	800 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg[Hold:>100/100 Mkr1	.0 ms (30000 pts) TRACE 1 2 3 4 5 5 TYPE MWWWWWWW DET P NNNNN 24.404 8 GHz -37.898 dBm DL1 -29 80 d€m 01 -29 80 d€m	- 6
Res         BW 100 kHz           SG         Reysight Spectrum Analyzer - Swept SA           RF         50 Ω         Acc           Aarker 1 24.404794009         Ref 20.00 dBm           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0 <t< td=""><td>800 GHz PNO: Fast IFGain:Low</td><td>SENSE:INT</td><td>ALIGN AUTO Avg Type: Log-Pwr Avg[Hold:&gt;100/100 Mkr1</td><td>.0 ms (30000 pts) TRACE 1 2 3 4 5 5 TYPE MWWWWWWW DET P NNNNN 24.404 8 GHz -37.898 dBm DL1 -29 80 d€m 01 -29 80 d€m</td><td>Peak Search Next Peak Next Pk Rig Next Pk Lu Marker De Mkr→C</td></t<>	800 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg[Hold:>100/100 Mkr1	.0 ms (30000 pts) TRACE 1 2 3 4 5 5 TYPE MWWWWWWW DET P NNNNN 24.404 8 GHz -37.898 dBm DL1 -29 80 d€m 01 -29 80 d€m	Peak Search Next Peak Next Pk Rig Next Pk Lu Marker De Mkr→C
Res         BW 100 kHz           SG         Reysight Spectrum Analyzer - Swept SA           RF         50 Ω         Acc           Aarker 1 24.404794009         Ref 20.00 dBm           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0         G         G           0 <t< td=""><td>800 GHz PNO: Fast IFGain:Low</td><td>SENSE:INT</td><td>STATUS</td><td>.0 ms (30000 pts) TRACE 1 2 3 4 5 5 TYPE MWWWWWWW DET P NNNNN 24.404 8 GHz -37.898 dBm DL1 -29 80 d€m 01 -29 80 d€m</td><td>Peak Search Next Pea Next Pk Rig Next Pk Lo Marker De</td></t<>	800 GHz PNO: Fast IFGain:Low	SENSE:INT	STATUS	.0 ms (30000 pts) TRACE 1 2 3 4 5 5 TYPE MWWWWWWW DET P NNNNN 24.404 8 GHz -37.898 dBm DL1 -29 80 d€m 01 -29 80 d€m	Peak Search Next Pea Next Pk Rig Next Pk Lo Marker De

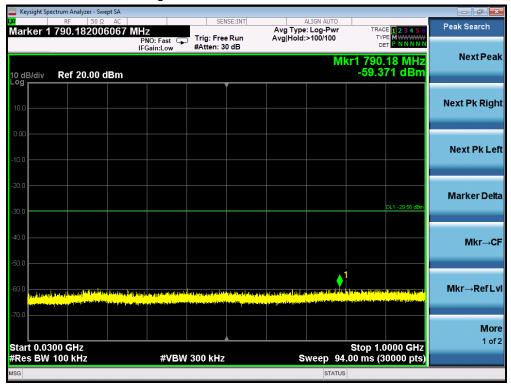


### TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11g FOR MODULATION IN MIDDLE CHANNEL

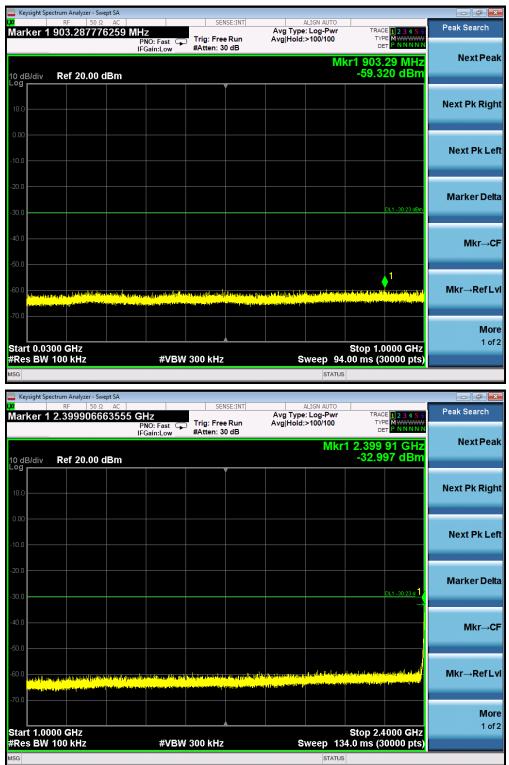


### TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE

OF 802.11g FOR MODULATION IN HIGH CHANNEL



Keysight Spectrum Analyzer - Swept SA RF 50 Ω AC	2	SENSE:INT	ALIGN AUTO		Peak Search
Marker 1 2.3906196873	B23 GHz PNO: Fast IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE M WWWWW DET P N N N N N	r can ocarcin
	IFGam.Low	witten. oo ub	Mkr1	2.390 62 GHz	NextPea
o dB/div Ref 20.00 dBn	n			-57.627 dBm	
					Next Pk Rig
10.0					J
0.00					
10.0					Next Pk Le
20.0					
20.0					Marker De
30.0				DL1 -29.56 dBm	
40.0					Mkr→0
50.0					
60.0 Rettil og en trins i den skiller filet i frede			n de geleg hildelige (n. 1996). Na servez a	hilding product by the solid position of a first of the solid of the s	Mkr→RefL
70.0					
					<b>Mo</b> 1 o
Start 1.0000 GHz Res BW 100 kHz	#VBW		Sweep 134	Stop 2.4000 GHz .0 ms (30000 pts)	10
	#VBW	300 kHz	Sweep 134 STATUS	Stop 2.4000 GHz .0 ms (30000 pts)	
Res BW 100 KHz SG Keysight Spectrum Analyzer - Swept SA	A		Sweep 134 Status	Stop 2.4000 GHz .0 ms (30000 pts)	- @ @
Res BW 100 kHz sg keysight Spectrum Analyzer - Swept SA RF 50 Ω AC	1789 GHz	SENSE:INT	Sweep 134	.0 ms (30000 pts)	
Res BW 100 kHz           SG           Keysight Spectrum Analyzer - Swept SA           RF         50 Ω	A C	SENSE:INT	Sweep 134 status Augn Auton Avg Type: Log-Pwr Avg Hold:>100/100	.0 ms (30000 pts) TRACE 1 2 34 5 6 TYPE M	Peak Search
Res BW 100 kHz           3G           Keysight Spectrum Analyzer - Sweet SA           RF         50 Q           Iarker 124.991743674           0 dB/div         Ref 20.00 dBn	1789 GHz PN0: Fast IFGain:Low	SENSE:INT	Sweep 134 status Augn Auton Avg Type: Log-Pwr Avg Hold:>100/100	.0 ms (30000 pts)	Peak Search
Res BW 100 kHz sa keysight Spectrum Analyzer - Sweet SA RF 50 Q AC larker 1 24.991743674 0 dB/div Ref 20.00 dBn	1789 GHz PN0: Fast IFGain:Low	SENSE:INT	Sweep 134 status Augn Auton Avg Type: Log-Pwr Avg Hold:>100/100	.0 ms (30000 pts)	Peak Search Next Pea
Res BW 100 kHz sa keysight Spectrum Analyzer - Sweet SA RF 50 Q AC larker 1 24.991743674 0 dB/div Ref 20.00 dBn	1789 GHz PN0: Fast IFGain:Low	SENSE:INT	Sweep 134 status Augn Auton Avg Type: Log-Pwr Avg Hold:>100/100	.0 ms (30000 pts)	Peak Search Next Pea
Res BW 100 kHz sa sa keysight Spectrum Analyzer - Swept SA RF S0 Q AC larker 1 24.991743674 0 dB/div Ref 20.00 dBn	1789 GHz PN0: Fast IFGain:Low	SENSE:INT	Sweep 134 status Augn Auton Avg Type: Log-Pwr Avg Hold:>100/100	.0 ms (30000 pts)	Peak Search Next Pea
Res BW 100 kHz           sa           Keysight Spectrum Analyzer - Swept SA           RF         50 Ω           Narker 1 24.991743674           0 dB/div         Ref 20.00 dBn           0 0 dB/div         Ref 20.00 dBn	1789 GHz PN0: Fast IFGain:Low	SENSE:INT	Sweep 134 status Augn Auton Avg Type: Log-Pwr Avg Hold:>100/100	.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig
Res BW 100 kHz           SG           SG           RF         S0 Ω AC           Narker 1 24.991743674           0 dB/div         Ref 20.00 dBn           00 dB/div         Ref 20.00 dBn           00 dB/div         Ref 20.00 dBn	1789 GHz PN0: Fast IFGain:Low	SENSE:INT	Sweep 134 status Augn Auton Avg Type: Log-Pwr Avg Hold:>100/100	.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig
Res BW 100 kHz           sg           sg           RF         50 Ω AC           larker 1 24.991743674           0 dB/div         Ref 20.00 dBn           9         0           10 0         0	1789 GHz PN0: Fast IFGain:Low	SENSE:INT	Sweep 134 status Augn Auton Avg Type: Log-Pwr Avg Hold:>100/100	.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Le
Res BW 100 kHz           SG           SG           Keysight Spectrum Analyzer - Swept SA           RF         50 Q           Arker 1 24.991743674           0 dB/div         Ref 20.00 dBn           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0	1789 GHz PN0: Fast IFGain:Low	SENSE:INT	Sweep 134 status Augn Auton Avg Type: Log-Pwr Avg Hold:>100/100	.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Lu
Res BW 100 kHz           sq           Reysight Spectrum Analyzer - Sweet SA           RF         50 Q. Ac           Iarker 1 24.991743674           0 dB/div         Ref 20.00 dBn           9	1789 GHz PN0: Fast IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	Sweep 134	.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Lo Marker De
Res BW 100 kHz           sq           Reysight Spectrum Analyzer - Sweet SA           RF         50 Q           Action 1 24.991743674           0 dB/div         Ref 20.00 dBn           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0	1789 GHz PN0: Fast IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	Sweep 134	.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Lu
Res BW 100 kHz sg keysight Spectrum Analyzer - Swept SA RF 50 Ω AC Narker 1 24.991743674	1789 GHz PN0: Fast IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	Sweep 134	.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Le
Res BW 100 kHz           sa           keysight Spectrum Analyzer - Sweet SA           PF         50 Q           Aarker 1 24.991743674           0 dB/div         Ref 20.00 dBn           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0	1789 GHz PN0: Fast IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	Sweep 134	.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Lo Marker De Mkr-o
Res         BW 100 kHz           sa         Reysight Spectrum Analyzer - Sweet SA           RF         50 Q           Aarker 1 24.991743674           0 dB/div         Ref 20.00 dBn	1789 GHz PN0: Fast IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	Sweep 134	.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Lo Marker De
Res         BW 100 kHz           SG         Reysight Spectrum Analyzer - Sweet SA           RF         50 Q           Aarker 1 24.991743674           0 diB/div         Ref 20.00 dBn           0 0         Ref 20.00 d	1789 GHz PN0: Fast IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	Sweep 134	.0 ms (30000 pts)	Peak Search Next Peak Next Pk Rig Next Pk Le Marker De Mkr→Ref L Mo
Res         BW 100 kHz           SG         RF         50 Q           RF         50 Q         Acr           Aarker 1 24.991743674         Ref 20.00 dBn         Ref 20.00 dBn           0         G         G         G           0         G         G         G         G           0         G         G         G         G           0         G         G         G         G           0         G         G         G         G         G           0         G         G         G         G         G         G           0         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G         G	A PNO: Fast IFGain:Low n n	SENSE:INT Trig: Free Run #Atten: 30 dB	Sweep 134	.0 ms (30000 pts)	



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



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

OF 802.11n20 FOR MODULATION IN MIDDLE CHANNEL

Keysight Spectrum Analyzer -						
Marker 1 176.1192	PNO: F	ast 😱 Trig: Free	eRun Av	ALIGN AUTO vg Type: Log-Pwr vg Hold:>100/100	TRACE 123456 TYPE MWWWWW DET PNNNNN	Peak Search
10 dB/div Ref 20.0	IFGain:I 0 dBm	_ow#Atten: 3	U dB	Μ	kr1 176.12 MHz -59.216 dBm	Next Peak
10.0						Next Pk Righ
0.00						Next Pk Lef
30.0					DL1 -30.01 dBm.	Marker Delt
40.0						Mkr→C
60.0	n de la factoria de la construcción de la construcción de la construcción de la construcción de la construcción Nomente persona de la construcción d	n paga da manan ing panganan ing panganan 19 da tanàna ing panganana da man	inist filision an order of the	alego egy falla an an gallan an a	et stan get førstan get for at 1996 for 11 fegalerer A stan ogsatsforste Help for årsta et ska at de	Mkr→RefLv
70.0 Start 0.0300 GHz					Stop 1.0000 GHz	<b>Mor</b> 1 of:
Res BW 100 kHz		#VBW 300 kHz		Sweep 9-	4.00 ms (30000 pts) s	

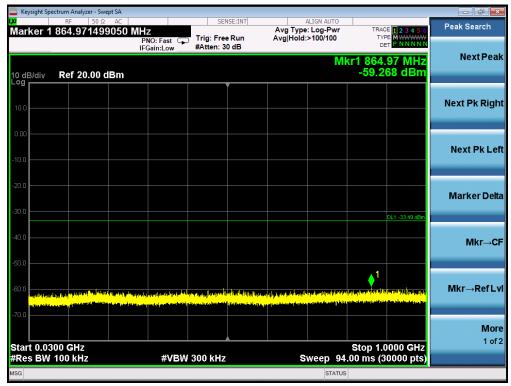
Keysight Spectrum Analyzer - Swept SA           RF         50 Ω         AC		SENSE:INT	ALIGN AUTO		Peak Search
larker 1 2.3969198973	PNO: Fast 🕞	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWWW DET P N N N N N	I can Scalch
	IFGain:Low	# Alten: 00 dB	Mkr1	2.396 92 GHz	NextPea
dB/div Ref 20.00 dBm				-57.435 dBm	
0.0					Next Pk Rig
0.0					-
).00					
0.0					Next Pk Lo
20.0					
					Marker De
0.0				DL1 -30.01 dBm	
0.0					Mkr→0
0.0					
				1	
10.0 Material and a first of the second state	n an		t here an an a start of the start In the start of the s	leiteren hannen handisken hadend mitteren er en er en er en er en er	Mkr→RefL
0.0					
					Mo 1 o
	#VBW	/ 300 kHz	Sweep 134	Stop 2.4000 GHz .0 ms (30000 pts)	
tart 1.0000 GHz Res BW 100 kHz ^{3G}	#VBW	/ 300 kHz	Sweep 134 status	Stop 2.4000 GHz .0 ms (30000 pts)	
Res BW 100 kHz SG Keysight Spectrum Analyzer - Swept SA			STATUS	Stop 2.4000 GHz .0 ms (30000 pts)	
Res BW 100 kHz G Keysight Spectrum Analyzer - Swept SA RF 50 Ω AC	908 GHz	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	.0 ms (30000 pts)	
Res BW 100 kHz G Keysight Spectrum Analyzer - Swept SA RF 50 Ω AC		SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.0 ms (30000 pts) TRACE 1 2 3 4 5 0 TYPE M	Peak Search
Res BW 100 kHz (g Keysight Spectrum Analyzer - Swept SA RF 50 Ω AC arker 1 24.957217223 0 dE/div Ref 20.00 dBm	908 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.0 ms (30000 pts)	Peak Search
Res BW 100 kHz (g Keysight Spectrum Analyzer - Swept SA RF 50 Ω AC arker 1 24.957217223 0 dE/div Ref 20.00 dBm	908 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.0 ms (30000 pts) TRACE 1 2 3 4 5 0 TYPE M	Peak Search Next Pe
Res BW 100 kHz           ig           Keysight Spectrum Analyzer - Swept SA           RF         50 Ω           arker 1 24.9572172233           0 dB/div         Ref 20.00 dBm	908 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.0 ms (30000 pts) TRACE 1 2 3 4 5 0 TYPE M	Peak Search Next Pe
Res BW 100 kHz           ig           Keysight Spectrum Analyzer - Swept SA           RF         50 Ω           arker 1 24.9572172233           0 dB/div         Ref 20.00 dBm           0         0	908 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.0 ms (30000 pts) TRACE 1 2 3 4 5 0 TYPE M	Peak Search Next Pe
Res BW 100 kHz           IG           Keysight Spectrum Analyzer - Swept SA           RF         50 Ω           arker 1 24.9572172233           0 dB/div         Ref 20.00 dBm           00         0.00	908 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.0 ms (30000 pts) TRACE 1 2 3 4 5 0 TYPE M	Peak Search Next Pe Next Pk Rig
Res BW 100 kHz           IG           Keysight Spectrum Analyzer - Swept SA           RF         50 Ω           arker 1 24.9572172233           0 dB/div         Ref 20.00 dBm           00         00           0.0         00	908 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.0 ms (30000 pts) TRACE 1 2 3 4 5 0 TYPE M	Peak Search Next Pe Next Pk Rig
Res BW 100 kHz           IG           Keysight Spectrum Analyzer - Swept SA           RF         50 Ω           arker 1 24.9572172233           0 dB/div         Ref 20.00 dBm           00         00           0.0         00	908 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.0 ms (30000 pts) TRACE 1 2 3 4 5 0 TYPE M	Peak Search Next Pe Next Pk Rig Next Pk L
Res BW 100 kHz           IG           IG           IKeysight Spectrum Analyzer - Swept SA           RF         50 Ω           Iarker 1 24.9572172233           OdB/div         Ref 20.00 dBm           OdB/div         Ref 20.00 dBm           0.0         0.0           0.0         0.0	908 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.0 ms (30000 pts) TRACE 1 2 3 4 5 0 TYPE M	Peak Search Next Pea Next Pk Rig Next Pk Lu
Res BW 100 kHz           IG           IG           Image: Section Analyzer - Swept SA           Image: Section Analyzer - Swept SA <td>908 GHz PNO: Fast IFGain:Low</td> <td>SENSE:INT Trig: Free Run #Atten: 30 dB</td> <td>ALIGN AUTO Avg Type: Log-Pwr Avg Hold:&gt;100/100 MKr1</td> <td>0 ms (30000 pts)</td> <td>Peak Search Next Pea Next Pk Rig Next Pk Lu</td>	908 GHz PNO: Fast IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 MKr1	0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Lu
Res BW 100 kHz           3G           (Keysight Spectrum Analyzer - Swept SA           RF         50 Ω           Acriser 1 24.9572172233           0 dB/div         Ref 20.00 dBm           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0	908 GHz PNO: Fast IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 MKr1	.0 ms (30000 pts) TRACE 1 2 3 4 5 0 TYPE M	Peak Search Next Pea Next Pk Rig Next Pk Lu
Res BW 100 kHz           3G           (Keysight Spectrum Analyzer - Swept SA           RF         50 Ω           Acriser 1 24.9572172233           0 dB/div         Ref 20.00 dBm           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0           0 0         0	908 GHz PNO: Fast IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 MKr1	0 ms (30000 pts)	Peak Search Next Pe Next Pk Rig Next Pk Lu Marker De
Res BW 100 kHz sg keysight Spectrum Analyzer - Swept SA RF 50 Ω AC larker 1 24.957217223	908 GHz PNO: Fast IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 MKr1	0 ms (30000 pts)	Peak Search Next Pe Next Pk Rig Next Pk Lu Marker De
Res BW 100 kHz           3G	908 GHz PNO: Fast IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 MKr1	0 ms (30000 pts)	Peak Search Next Pe Next Pk Rig Next Pk Lu Marker De
Res BW 100 kHz           IG           Keysight Spectrum Analyzer - Swept SA           RF         50 Q ACC           Iarker 1 24.9572172233           Q           D         GB/div           Ref 20.00 dBm           Q           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0	908 GHz PNO: Fast IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 MKr1	0 ms (30000 pts)	Peak Search Next Pe Next Pk Rig Next Pk Lu Marker De Mkr→Ref L
Res BW 100 kHz           IG           Keysight Spectrum Analyzer - Swept SA           RF         50 Q ACC           Iarker 1 24.9572172233           Q           D         GB/div           Ref 20.00 dBm           Q           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0           0.0	908 GHz PNO: Fast IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 MKr1	0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Lu

Keysight Spectrum Analyzer - Swept SA RF 50 Ω AC		SENSE:INT	ALIGN AUTO		
larker 1 797.97459915:	PNO: Fast 😱	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWWW DET P N N N N N	Peak Search
D dB/div Ref 20.00 dBm	IFGain:Low	#Atten: 30 dB	MI	kr1 797.97 MHz -58.956 dBm	Next Pea
og 0.0					Next Pk Rig
0.00					Next Pk Le
0.0					
0.0				DL1 -30.08 dBm	Marker Del
0.0					Mkr→C
0.0	n contra presidente da la contra da contr	Anna Hannard an Thur ann an Anna Anna Anna Anna Anna Anna A	State at the state of the state	1 May 19 Cal Alfred Cal Pro Server Press Toman	Mkr→RefL
<mark>, para da de la para (a de la para (a) de la para da para de la para (a) para (a) para da para de la para (a) para (a) para de la para (a) para (a) para de la para (a) para (a) para de la para (a) para (a) para (a) para de la para (a) p</mark>	ulificiti actor con a canato cital actor	an a	n partie en la franzen en e	rege _{en e} n eksi yik en liik-timbelen yike sier <u>skee (nisk mit est</u> est	Мо
					4 - 1
Res BW 100 kHz	#VBW	/ 300 kHz		Stop 1.0000 GHz .00 ms (30000 pts)	1 01
Res BW 100 kHz	#VBW	/ 300 kHz	Sweep 94	.00 ms (30000 pts)	1 of
tart 0.0300 GHz Res BW 100 kHz G Keysight Spectrum Analyzer - Swept SA RF 50 Ω AC		/ 300 kHz	STATUS ALIGN AUTO	.00 ms (30000 pts)	
Res BW 100 kHz G Keysight Spectrum Analyzer - Swept SA	74 GHz PNO: Fast	SENSE:INT	STATUS	.00 ms (30000 pts)	
Res BW 100 kHz g Keysight Spectrum Analyzer - Swept SA P RF 50 0 AC arker 1 2.39701323377 0 dB/div Ref 20.00 dBm	74 GHz PNO: Fast IFGain:Low	SENSE:INT	STATUS ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.00 ms (30000 pts)	Peak Search
Res BW 100 kHz G Keysight Spectrum Analyzer - Swept SA RF 50 Ω AC arker 1 2.3970132337 dB/div Ref 20.00 dBm	74 GHz PNO: Fast IFGain:Low	SENSE:INT	STATUS ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.00 ms (30000 pts)	Peak Search Next Pea
Res BW 100 kHz           g           Keysight Spectrum Analyzer - Swept SA           RF         50 Ω           arker 1 2.39701323371           dB/div         Ref 20.00 dBm	74 GHz PNO: Fast IFGain:Low	SENSE:INT	STATUS ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.00 ms (30000 pts)	Peak Search Next Pea Next Pk Rig
Res BW 100 kHz g Keysight Spectrum Analyzer - Swept SA RF 50 Ω AC arker 1 2.3970132337	74 GHz PNO: Fast IFGain:Low	SENSE:INT	STATUS ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.00 ms (30000 pts)	Peak Search Next Pea Next Pk Rig
Res BW 100 kHz           g           Keysight Spectrum Analyzer - Swept SA           RF         50 0 AC           arker 1 2.39701323377           dB/div         Ref 20.00 dBm           00         00           00         00           00         00	74 GHz PNO: Fast IFGain:Low	SENSE:INT	STATUS ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.00 ms (30000 pts)	Peak Search Next Pea Next Pk Rig
Res BW 100 kHz           g           Keysight Spectrum Analyzer - Swept SA           RF         50 0 AC           arker 1 2.39701323377           dB/div         Ref 20.00 dBm           00         00           00         00           00         00	74 GHz PNO: Fast IFGain:Low	SENSE:INT	STATUS ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.00 ms (30000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Le
Res BW 100 kHz           g           Keysight Spectrum Analyzer - Swept SA           RF         50 Ω           Acc           arker 1 2.39701323371           0 dB/div         Ref 20.00 dBm           00           00	74 GHz PNO: Fast IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 Mkr	.00 ms (30000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Le Marker De
Res BW 100 kHz           g           Keysight Spectrum Analyzer - Swept SA           RE         50 \overline Acc           arker 1 2.39701323377           dB/div         Ref 20.00 dBm           00         00           00         00           00         00           00         00	74 GHz PNO: Fast IFGain:Low	Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 Mkr	.00 ms (30000 pts)	

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



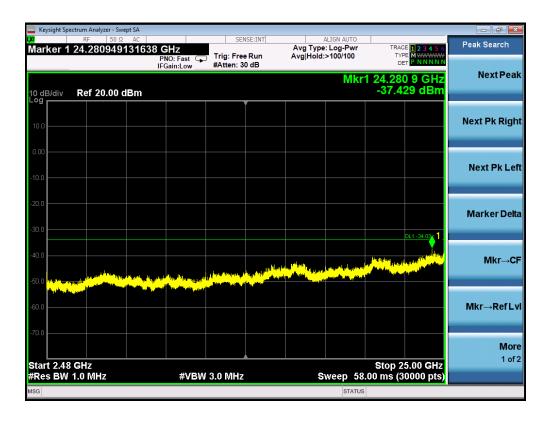
### TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF 802.11n40 FOR MODULATION IN LOW CHANNEL



Keysight Sp	RF 50 Ω			SEN	NSE:INT		ALIGN AUTO	TDAG		Peak Search
larker 1	2.3998133	F	PNO: Fast 🔾 🕞	Trig: Free #Atten: 3		Avg Type Avg Hold	e: Log-Pwr :>100/100		E 1 2 3 4 5 6 E M WWWWW F P N N N N N	
		11	Gain:Low	#Atten: 5	U U D		Mkr'	1 2.399	81 GHz	NextPe
0 dB/div .og	Ref 20.00 d	lBm						-37.7	36 dBm	
					Ī					Next Pk Rig
10.0										NEAL FR RIS
0.00										
10.0										Next Pk L
10.0										
20.0										Marker De
30.0									DL1 -33.49 d <mark>1</mark> ,	
40.0										Mkr→0
50.0										
50.0				d. David krite of the k	those and	WARDER BRITTEN A	والمراد الانتحاد والعزير أورابهم	ri.		Mkr→RefL
and the second second		n de la collection de la c	an la na la dana la sana dan	algorith in the second second		and the second	, il colorin habita pallera	ana paring ranks para p	an an an airte an	
70.0										Ma
	000 GHz				A			Stop 2/		10
Res BW	000 GHz 100 kHz		#VBV	V 300 kHz		s	weep 13		1000 GHz 0000 pts)	10
			#VBV	V 300 kHz		S	weep 13			1 0
Res BW	100 kHz		#VBV				STATUS			
Res BW	100 kHz	AC 349578	GHz	SEN	NSE:INT	Avg Type	STATUS	4.0 ms (3	20000 pts)	
Res BW	100 kHz ectrum Analyzer - Swe RF 50 Ω	AC 349578		SEN	NSE:INT		STATUS ALIGN AUTO 2: Log-Pwr :>100/100	4.0 ms (3	20000 pts)	Peak Search
Res BW sg Keysight Sp larker 1 0 dB/div	100 kHz ectrum Analyzer - Swe RF 50 Ω	AC 349578 IF	GHz PNO: Fast	SE™	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr :>100/100	4.0 ms (3	20000 pts)	Peak Search
Res BW	100 kHz ectrum Analyzer - Sw RF 50 Ω 24.983487	AC 349578 IF	GHz PNO: Fast	SE™	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr :>100/100	4.0 ms (3	20000 pts)	Peak Search NextPe
Res BW sg Keysight Sp larker 1	100 kHz ectrum Analyzer - Sw RF 50 Ω 24.983487	AC 349578 IF	GHz PNO: Fast	SE™	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr :>100/100	4.0 ms (3	20000 pts)	Peak Search NextPe
Res BW	100 kHz ectrum Analyzer - Sw RF 50 Ω 24.983487	AC 349578 IF	GHz PNO: Fast	SE™	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr :>100/100	4.0 ms (3	20000 pts)	Peak Search NextPe
Res BW aa keysight Sp larker 1 0 dB/div 0 dB/div	100 kHz ectrum Analyzer - Sw RF 50 Ω 24.983487	AC 349578 IF	GHz PNO: Fast	SE™	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr :>100/100	4.0 ms (3	20000 pts)	Peak Search Next Pe Next Pk Rig
Res BW sa sa sa s Keysight Sp larker 1 0 dB/div 0 g 10.0	100 kHz ectrum Analyzer - Sw RF 50 Ω 24.983487	AC 349578 IF	GHz PNO: Fast	SE™	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr :>100/100	4.0 ms (3	20000 pts)	Peak Search Next Pea Next Pk Rig
Res BW sa a keysight Sp a keys	100 kHz ectrum Analyzer - Sw RF 50 Ω 24.983487	AC 349578 IF	GHz PNO: Fast	SE™	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr :>100/100	4.0 ms (3	20000 pts)	Peak Search Next Pe Next Pk Rig Next Pk Li
Res BW sa a b sa b sa b sa b sa b sa b sa b s	100 kHz ectrum Analyzer - Sw RF 50 Ω 24.983487	AC 349578 IF	GHz PNO: Fast	SE™	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr :>100/100	4.0 ms (3	20000 pts) 23456 27 MNNNN 35 GHz 87 dBm	Peak Search Next Pe Next Pk Rig Next Pk Li
Res BW sa a b sa b sa b sa b sa b sa b sa b s	100 kHz ectrum Analyzer - Sw RF 50 Ω 24.983487	AC 349578 IF	GHz PNO: Fast	SE™	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr :>100/100	4.0 ms (3	20000 pts)	Peak Search Next Pea Next Pk Rig
Res BW s a cell cell cell cell cell cell cell ce	100 kHz ectrum Analyzer - Sw RF 50 Ω 24.983487	AC 349578 IF	GHz PNO: Fast	SE™	vse:int e Run 0 dB	Avg Type Avg Hold	ALIGN AUTO :: Log-Pwr :>100/100 MKr*	1.0 ms (3	20000 pts) 23456 27 MNNNN 35 GHz 87 dBm	Peak Search Next Peak Next Pk Rig Next Pk Lu
Res BW           3G           Keysight Sp           Iarker 1           0 dB/div           0 d	100 kHz ectrum Analyzer - Sw RF 50 Ω 24.983487	AC 349578 IF	GHZ PNO: Fast Gain:Low	SE™	vse:int e Run 0 dB	Avg Type	ALIGN AUTO :: Log-Pwr :>100/100 MKr*	4.0 ms (3	20000 pts) 23456 27 MNNNN 35 GHz 87 dBm	Peak Search Next Pe Next Pk Rig Next Pk Li
Res         BW           sq	100 kHz ectrum Analyzer - Sw RF 50 Ω 24.983487	349578 ( 18m	GHZ PNO: Fast Gain:Low	Trig: Free #Atten: 3	vse:int e Run 0 dB	Avg Type Avg Hold	ALIGN AUTO :: Log-Pwr :>100/100 MKr*	1.0 ms (3	20000 pts) 23456 27 MNNNN 35 GHz 87 dBm	Peak Search Next Pe Next Pk Rig Next Pk L Marker De
Res BW           sq           Keysight Sp           Iarker 1           0 dB/div           9           10.0           9           10.0           9           10.0           9           10.0           10.0           10.0           10.0           10.0           10.0           10.0	100 kHz ectrum Analyzer - Sw RF 50 Ω 24.983487	349578 ( 18m	GHZ PNO: Fast Gain:Low	Trig: Free #Atten: 3	vse:int e Run 0 dB	Avg Type Avg Hold	ALIGN AUTO :: Log-Pwr :>100/100 MKr*	1.0 ms (3	20000 pts) 23456 27 MNNNN 35 GHz 87 dBm	Peak Search Next Pe Next Pk Rig Next Pk L Marker De
Res         BW           sq	100 kHz ectrum Analyzer - Sw RF 50 Ω 24.983487	349578 ( 18m	GHZ PNO: Fast Gain:Low	SEP Trig: Free #Atten: 3	vse:int e Run 0 dB	Avg Type Avg Hold	ALIGN AUTO :: Log-Pwr :>100/100 MKr*	1.0 ms (3	20000 pts) 23456 27 MNNNN 35 GHz 87 dBm	Peak Search Next Pe Next Pk Rig Next Pk L Marker De
Res BW           3G           Iarker 1           Iarker 1           0 dB/div           9 g           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0           10.0	100 kHz ectrum Analyzer - Sw RF 50 Ω Ref 20.00 d	349578 ( 18m	GHZ PNO: Fast Gain:Low	SEP Trig: Free #Atten: 3	vse:int e Run 0 dB	Avg Type Avg Hold	ALIGN AUTO :: Log-Pwr :>100/100 MKr*	4.0 ms (3	0000 pts)	Peak Search Next Pe Next Pk Rig Next Pk Li Marker De Mkr→Ref L
Res BW aa keysight Sp larker 1 arker 1 arke	100 kHz ectrum Analyzer - Sw RF 50 Ω Ref 20.00 d	349578 ( 18m	GHZ PNO: Fast Gain:Low	SEP Trig: Free #Atten: 3	vse:int e Run 0 dB	Avg Type Avg Hold	ALIGN AUTO :: Log-Pwr :>100/100 MKr*	4.0 ms (3	5.00 GHz	

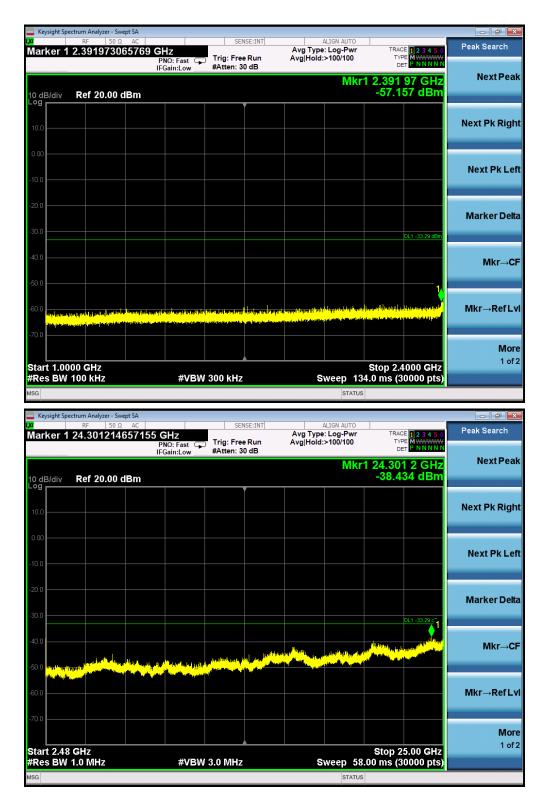
TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11n40 FOR MODULATION IN MIDDLE CHANNEL

Keysight Spectrum Analyzer - Swept SA RF 50 Ω AC		SENSE:INT	ALIGN AUTO		Peak Search
larker 1 764.67015567	PNO: Fast 🖵	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 123456 TYPE MWWWW DET P NNNNN	
0 dB/div Ref 20.00 dBm	IFGain:Low	#Atten: 30 dB	MI	kr1 764.67 MHz -59.246 dBm	Next Pea
					Next Pk Rig
0.00					
0.0					Next Pk Lo
0.0					Marker De
				DL1 -34.03 dBm	
0.0					Mkr→(
	ويستعر النجاب ويحريه الرابية المرابع				Mkr→RefL
energi dava da con el deve de con el deve de con el deve de con el deve deve deve deve deve deve deve d	n a comunicative comunicative de la comunicative de la comunicative de la comunicative de la comunicative de la Normal de la comunicative de la comu	an a	x x x x x x x x x x x x x x x x x x x		
					Mc 1 c
				Ofen 4 0000 OU-	
	#VBW	300 kHz	Sweep 94	Stop 1.0000 GHz .00 ms (30000 pts)	
Res BW 100 kHz	#VBW	300 kHz	Sweep 94	.00 ms (30000 pts)	
Res BW 100 kHz ^{IG} Keysight Spectrum Analyzer - Swept SA			STATUS	.00 ms (30000 pts)	
Res BW 100 kHz G Keysight Spectrum Analyzer - Swept SA RF 50 Ω AC	55 GHz PNO: Fast	SENSE:INT		.00 ms (30000 pts)	
Res BW 100 kHz G Keysight Spectrum Analyzer - Swept SA RF 50 Ω AC larker 1 2.3994866495	55 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.00 ms (30000 pts)	Peak Search
Res BW 100 kHz           ig           keysight Spectrum Analyzer - Swept SA           RF         50 Ω           arker 1 2.3994866495           0 dEl/div         Ref 20.00 dBm	55 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.00 ms (30000 pts)	Peak Search
Res BW 100 kHz           ig           Keysight Spectrum Analyzer - Swept SA           RF         50 Ω           arker 1 2.3994866495           0 dB/div         Ref 20.00 dBm	55 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.00 ms (30000 pts)	Peak Search Next Pe
Res BW 100 kHz           IG           Keysight Spectrum Analyzer - Swept SA           RF         50 Ω AC           arker 1 2.3994866495           0 dB/div         Ref 20.00 dBm           00         0.00	55 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.00 ms (30000 pts)	Peak Search Next Pe Next Pk Rig
Res BW 100 kHz           3G	55 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.00 ms (30000 pts)	Peak Search Next Pe Next Pk Rig Next Pk Li
Res BW 100 kHz           3G	55 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.00 ms (30000 pts)	Peak Search Next Pe Next Pk Rig Next Pk Li
Res BW 100 kHz           IG           IG           IRF           S0 Q           Iarker 1 2.3994866495           OdB/div           Ref 20.00 dBm           Image: State Stat	55 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	.00 ms (30000 pts)	Peak Search Next Pe Next Pk Rig Next Pk Lu
Res BW 100 kHz           IG           .keysight Spectrum Analyzer - Swept SA           RF         50 Q ACC           Iarker 1 2.3994866495           0	55 GHZ PNO: Fast IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 Mkr	00 ms (30000 pts)	Peak Search Next Pe Next Pk Rig Next Pk Lu Marker De
Iarker 1 2.3994866495           OddB/div         Ref 20.00 dBm           Ref 20.00 dBm	55 GHZ PNO: Fast IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 Mkr	.00 ms (30000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Lu Marker De
Res BW 100 kHz           3G           3G           Reprint Spectrum Analyzer - Swept SA           Ref         50.0 AC           Iarker 1 2.3994866495           0 dB/div         Ref 20.00 dBm           90	55 GHZ PNO: Fast IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 Mkr	00 ms (30000 pts)	Peak Search Next Pe Next Pk Rig Next Pk Lu Marker De Mkr→Ref L
Res BW 100 kHz           ig           Keysight Spectrum Analyzer - Swept SA           RF         50 Ω           RF         50 Ω           Image: Solution of the symptotic structure of the symptot stru	S5 GHZ PNO: Fast IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 Mkr	00 ms (30000 pts)	- 6



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

Keysight Spectrum Analyzer - Swept SA RF 50 Ω AC		SE:INT ALIGN	AUTO	
Marker 1 845.57085236		Avg Type: Log	g-Pwr TRACE 1234	w.
	IFGain:Low #Atten: 30	) dB	Mkr1 845.57 MH	
10 dB/div Ref 20.00 dBn	n		-59.589 dBi	n
				Next Dk Dish
10.0				Next Pk Righ
0.00				
-10.0				Next Pk Lef
10.0				
-20.0				Marker Delt
-30.0			DL1 -33.29 dl	am a
-40.0				
				Mkr→C
-50.0			<u></u> 1	
-60.0	a seconda personal a construction de la construction de la construction de la construction de la construction d	- 1. Distriction of the Announcement of the Announcement	an an a start for a start of the start of th	<mark>π</mark> Mkr→RefLv
-70.0	الم المناقبين في المراقبة ( المناقبة المناقبة عند المانية و الماسي في المراقبة ( الماسي في المراقبة الماسية ال المراقبة المسالية المراقبة ( المراقبة المراقبة ( المراقبة عند المراقبة و المراقبة ( المراقبة ( المراقبة المراقبة	the the particular sector of the test of the sector of the	n provinski politik na slovenski politik konstruktivni slovenski politik politik konstruktivni politik politik Na slovenski politik po	
				Mon
Start 0.0300 GHz	#\/B\W( 200 kHz		Stop 1.0000 GF	z 1 of 2
#Res BW 100 kHz	#VBW 300 kHz	Swee	ep 94.00 ms (30000 pt	<u>9</u>



Note: The 100kHz RBW used in the conducted spurious test from 2.4835GHz to 25GHz may result in long measuring times, To avoid such long measuring times, the 1MHz RBW can be used for pre-test. If the

emission level exceeded the limit at one or more frequencies, the 100kHz RBW would be used for final test at the special frequency.

## **10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY**

## **10.1 MEASUREMENT PROCEDURE**

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

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

### **10.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)**

Refer To Section 8.2.

### **10.3 MEASUREMENT EQUIPMENT USED**

Refer To Section 6.

#### **10.4 LIMITS AND MEASUREMENT RESULT**

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

|--|

Channel No.	PSD (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-3.390	8	Pass
Middle Channel	-2.035	8	Pass
High Channel	-3.002	8	Pass

Ant1:

Channel No.	PSD (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-4.775	8	Pass
Middle Channel	-4.086	8	Pass
High Channel	-3.357	8	Pass

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

Ant0:

Channel No.	PSD (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-7.179	8	Pass
Middle Channel	-6.619	8	Pass
High Channel	-7.838	8	Pass

Ant1:

Channel No.	PSD (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-7.351	8	Pass
Middle Channel	-7.218	8	Pass
High Channel	-8.015	8	Pass

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

Ant0:

Channel No.	PSD (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-7.392	8	Pass
Middle Channel	-7.358	8	Pass
High Channel	-5.916	8	Pass

## Ant1:

Channel No.	PSD (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-7.703	8	Pass
Middle Channel	-7.447	8	Pass
High Channel	-7.197	8	Pass

#### SUM:

Channel No.	PSD (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-4.53	8	Pass
Middle Channel	-4.39	8	Pass
High Channel	-3.50	8	Pass

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

Ant0:

Channel No.	PSD (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-9.899	8	Pass
Middle Channel	-10.210	8	Pass
High Channel	-9.291	8	Pass

## Ant1:

Channel No.	PSD (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-10.129	8	Pass
Middle Channel	-11.397	8	Pass
High Channel	-7.701	8	Pass

#### SUM:

Channel No.	PSD (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-7.00	8	Pass
Middle Channel	-7.75	8	Pass
High Channel	-5.41	8	Pass

#### 802.11b TEST RESULT-Ant0:



## TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL





## TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

#### 802.11b TEST RESULT-Ant1:

### TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL



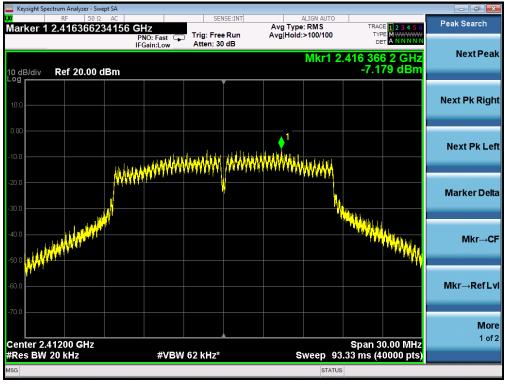


### TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

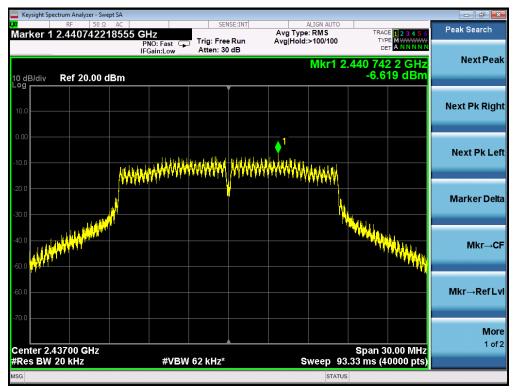


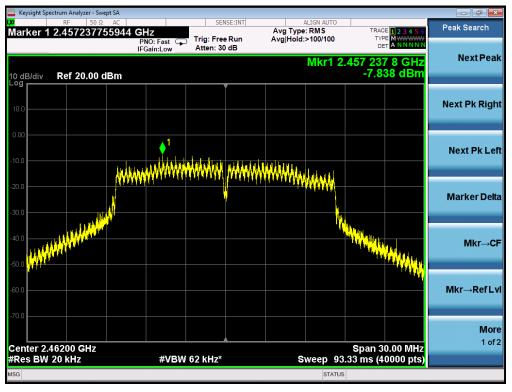
#### 802.11g TEST RESULT-Ant0:



## TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

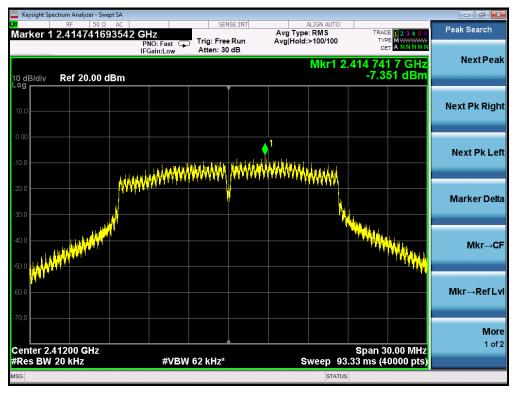


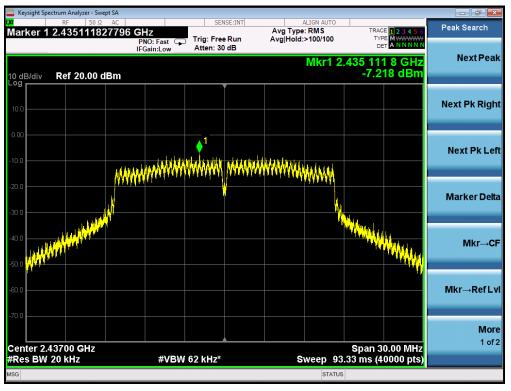


## TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

#### 802.11g TEST RESULT-Ant1:

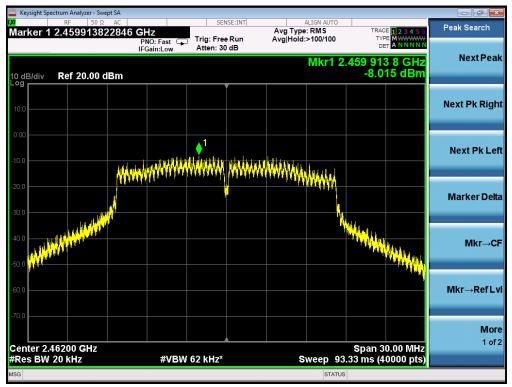
### TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL



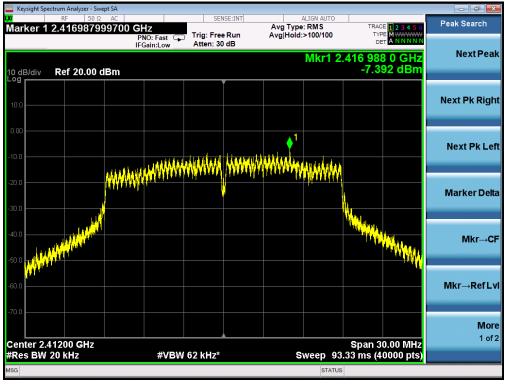


### TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL



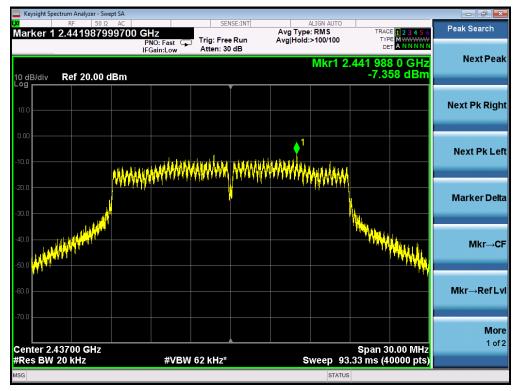


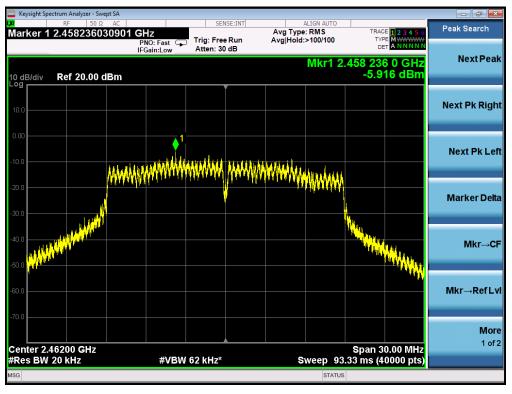
#### 802.11n 20 TEST RESULT-Ant0:



### TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

#### TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

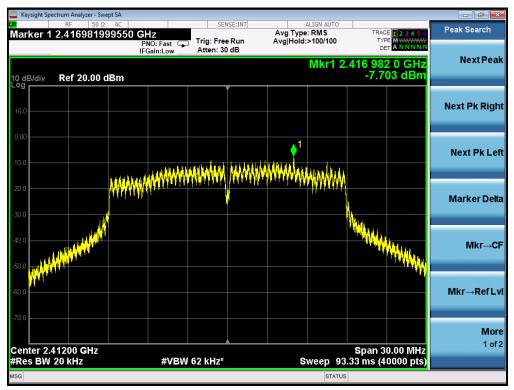


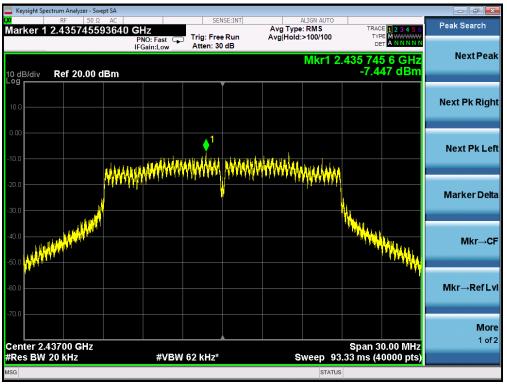


## TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

### 802.11n20 TEST RESULT-Ant1:

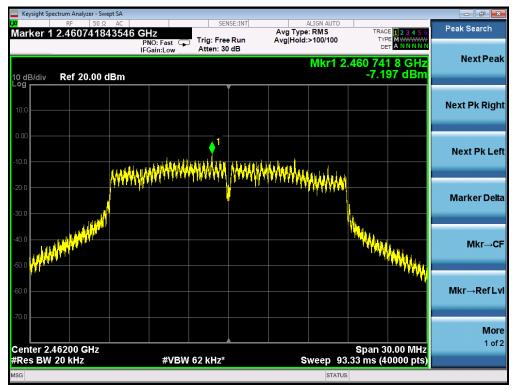
### TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL



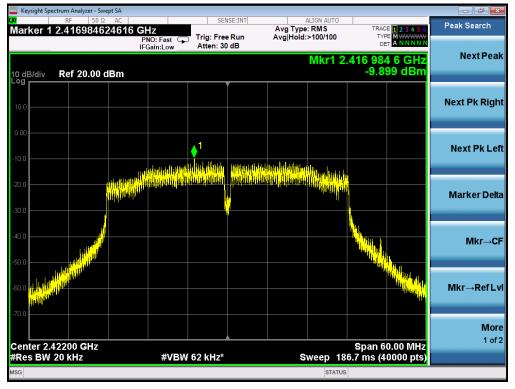


### TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL



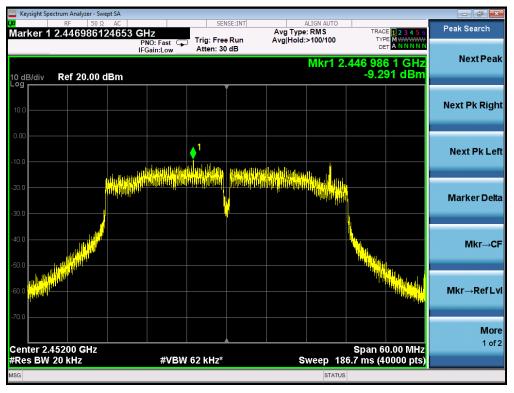
#### 802.11n 40 TEST RESULT-Ant0:



#### TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

🪾 Keysight Spe	ectrum Analyzer - Swe							_		
Marker 1	RF 50 Ω 2.43198912				ISE:INT	Avg Type Avg Hold:			E 1 2 3 4 5 6 E MWWWW	Peak Search
			NO: Fast 🖵 Gain:Low	Trig: Free Atten: 30				DE		
10 dB/div Log	Ref 20.00 d	IBm					Mkr1 2	.431 98 -10.2	9 1 GHz 10 dBm	Next Peak
				1						Next Pk Righ
10.0										
0.00				<u>_1</u>						Next Pk Lef
-10.0			dilaada. Hadadaa	olond identity	midathidd	analahanan	dha. I .			NEXT FR LET
-20.0			u hardisidiyadiy min yanang sili		National	uppmuluu	<b>nn an a</b> n an			
-30.0					1 1			<u> </u>		Marker Delta
								<b>h</b> .,		
-40.0	Letter Contraction							nitte. In litte		Mkr→C
50.0										
-60.0	<mark>i)(</mark> the									Mkr→RefLv
-70.0										
										More 1 of 2
Center 2.4 #Res BW	43700 GHz 20 kHz		#VBW	62 kHz*		S	weep 18	Span 6 6.7 ms (4	0.00 MHz 0000 pts)	
MSG							STATUS			

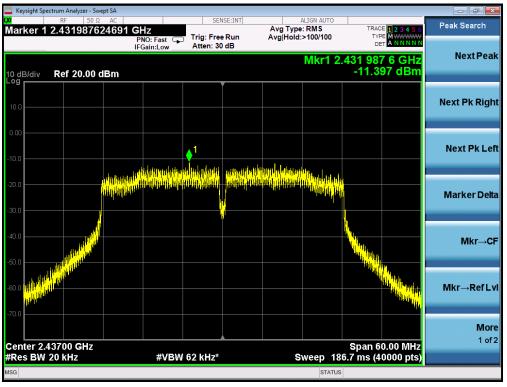


## TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

### 802.11n(40) TEST RESULT-Ant1:

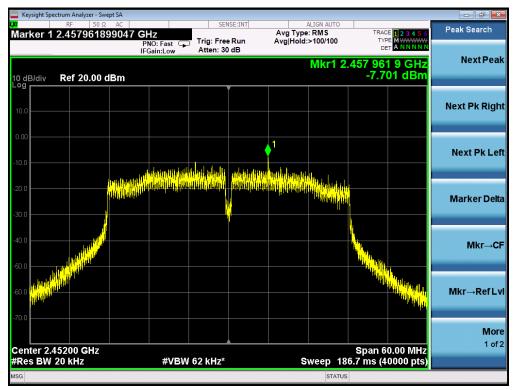
### TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL





### TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

#### TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

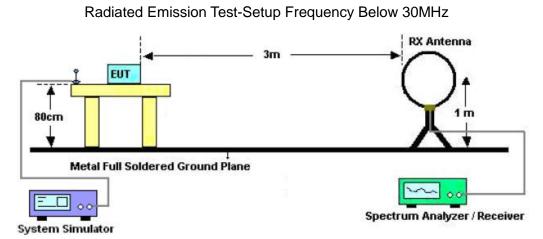


# 11. RADIATED EMISSION

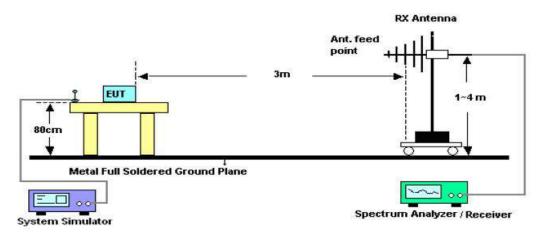
## **11.1. MEASUREMENT PROCEDURE**

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

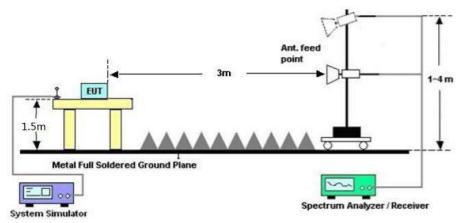
#### 11.2. TEST SETUP



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



## RADIATED EMISSION TEST SETUP ABOVE 1000MHz



### **11.3. LIMITS AND MEASUREMENT RESULT**

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

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

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

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

## 11.4. TEST RESULT

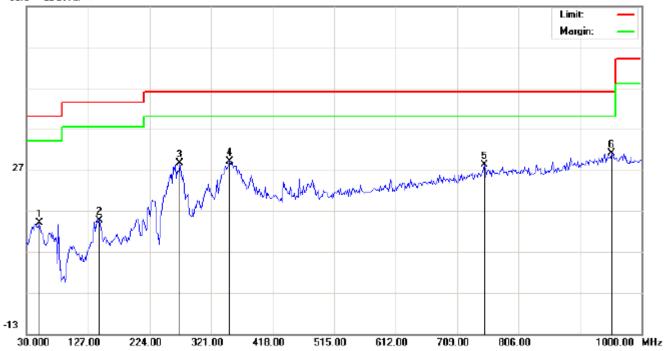
### **RADIATED EMISSION BELOW 30MHZ**

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

#### **RADIATED EMISSION BELOW 1GHZ**

EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ,ant0	Antenna	Horizontal



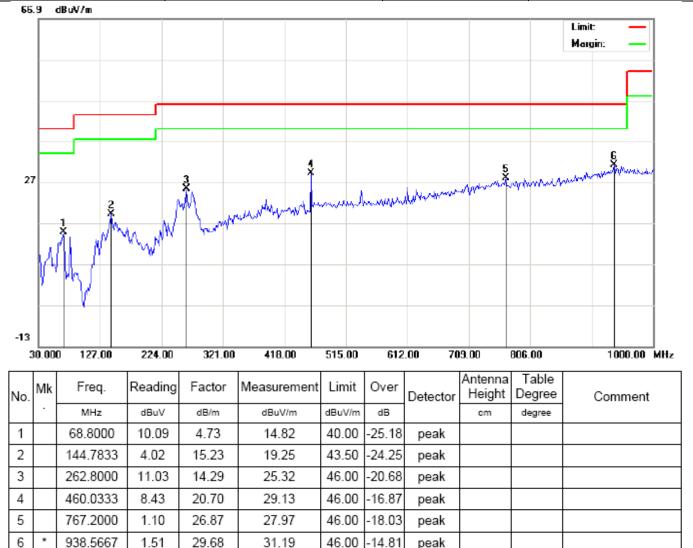


No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	•	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		49.4000	2.73	11.28	14.01	40.00	-25.99	peak			
2		144.7833	0.63	14.04	14.67	43.50	-28.83	peak			
3		270.8833	18.17	10.45	28.62	46.00	-17.38	peak			
4		350.1000	10.32	18.74	29.06	46.00	-16.94	peak			
5		752.6500	1.48	26.67	28.15	46.00	-17.85	peak			
6	*	953.1167	0.95	29.97	30.92	46.00	-15.08	peak			

**RESULT: PASS** 

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EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ,ant0	Antenna	Vertical



### **RESULT: PASS**

Note:

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

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

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

RADIATED EMISSION ABOVE TORZ						
EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac			
Temperature	25°C	Relative Humidity	55.4%			
Pressure	960hPa	Test Voltage	Normal Voltage			
Test Mode	802.11b with date rate 1 2412MHZ, Ant0	Antenna	Horizontal			

# **RADIATED EMISSION ABOVE 1GHZ**

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type	
4824.117	48.76	3.72	52.48	74	-21.52	peak	
4824.102	42.36	3.72	46.08	54	-7.92	AVG	
7236.083	41.25	8.15	49.4	74	-24.6	peak	
7236.065	37.04	8.15	45.19	54	-8.81	AVG	
Remark:							
Factor = Antenna Factor + Cable Loss – Pre-amplifier.							

EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
	ROULEIBOARD CAP GI-SacDZIID		
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ, Ant0	Antenna	Vertical

(dBµV)					
(	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
48.02	3.72	51.74	74	-22.26	peak
43.44	3.72	47.16	54	-6.84	AVG
43.01	8.15	51.16	74	-22.84	peak
37.98	8.15	46.13	54	-7.87	AVG
	43.44 43.01 37.98	43.44     3.72       43.01     8.15       37.98     8.15	43.44         3.72         47.16           43.01         8.15         51.16	43.44       3.72       47.16       54         43.01       8.15       51.16       74         37.98       8.15       46.13       54	43.44       3.72       47.16       54       -6.84         43.01       8.15       51.16       74       -22.84         37.98       8.15       46.13       54       -7.87

## Report No.: AGC07248170702FE02 Page 76 of 104

EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHZ, Ant0	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4874.039	48.15	3.75	51.9	74	-22.1	peak
4874.055	43.48	3.75	47.23	54	-6.77	AVG
7311.054	42.21	8.16	50.37	74	-23.63	peak
7311.117	37.46	8.16	45.62	54	-8.38	AVG
Remark:						
actor = Ante	enna Factor + Ca	able Loss – F	Pre-amplifier.			

EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHZ, Ant0	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4874.050	48.15	3.75	51.9	74	-22.1	peak
4874.044	43.48	3.75	47.23	54	-6.77	AVG
7311.102	42.21	8.16	50.37	74	-23.63	peak
7311.035	37.46	8.16	45.62	54	-8.38	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

## Report No.: AGC07248170702FE02 Page 77 of 104

EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHZ, Ant0	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4924.030	48.15	3.75	51.9	74	-22.1	peak
4924.032	43.48	3.75	47.23	54	-6.77	AVG
7386.026	42.21	8.16	50.37	74	-23.63	peak
7386.064	37.46	8.16	45.62	54	-8.38	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHZ, Ant0	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4924.099	48.15	3.75	51.9	74	-22.1	peak
4924.076	43.48	3.75	47.23	54	-6.77	AVG
7386.045	42.21	8.16	50.37	74	-23.63	peak
7386.084	37.46	8.16	45.62	54	-8.38	AVG
Remark:						
actor = Ante	enna Factor + Ca	able Loss – I	Pre-amplifier.			

## Report No.: AGC07248170702FE02 Page 78 of 104

EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20mimo with date rate 1 2412MHZ, ant0+ant1	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4824.051	48.15	3.75	51.9	74	-22.1	peak
4824.076	43.48	3.75	47.23	54	-6.77	AVG
7236.088	42.21	8.16	50.37	74	-23.63	peak
7236.039	37.46	8.16	45.62	54	-8.38	AVG
Remark:						
actor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20mimo with date rate 1 2412MHZ, ant0+ant1	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type	
4824.112	48.15	3.75	51.9	74	-22.1	peak	
4824.110	43.48	3.75	47.23	54	-6.77	AVG	
7236.073	42.21	8.16	50.37	74	-23.63	peak	
7236.050	37.46	8.16	45.62	54	-8.38	AVG	
Remark:							
Factor = Antenna Factor + Cable Loss – Pre-amplifier.							

EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20mimo with date rate 1 2437MHZ, ant0+ant1	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4874.101	48.15	3.75	51.9	74	-22.1	peak
4874.038	43.48	3.75	47.23	54	-6.77	AVG
7311.042	42.21	8.16	50.37	74	-23.63	peak
7311.040	37.46	8.16	45.62	54	-8.38	AVG
Remark:						
actor = Anter	na Factor + Cabl	e Loss – Pre-a	amplifier.			

EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20mimo with date rate 1 2437MHZ, ant0+ant1	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4874.084	48.15	3.75	51.9	74	-22.1	peak
4874.024	43.48	3.75	47.23	54	-6.77	AVG
7311.067	42.21	8.16	50.37	74	-23.63	peak
7311.103	37.46	8.16	45.62	54	-8.38	AVG
Remark:	1		•		1	1
actor = Anter	nna Factor + Cable	e Loss – Pre-	amplifier.			

EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20mimo with date rate 1 2462MHZ, ant0+ant1	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4924.023	48.15	3.75	51.9	74	-22.1	peak
4924.114	43.48	3.75	47.23	54	-6.77	AVG
7386.116	42.21	8.16	50.37	74	-23.63	peak
7386.118	37.46	8.16	45.62	54	-8.38	AVG
Remark:						
actor = Anter	na Factor + Cabl	e Loss – Pre-	amplifier.			

EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20mimo with date rate 1 2462MHZ, ant0+ant1	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	B) (dBµV/m) (dBµV/m		(dB)	value Type
4924.041	48.15	3.75	51.9	74	-22.1	peak
4924.059	43.48	3.75	47.23	54	-6.77	AVG
7386.060	42.21	8.16	50.37	74	-23.63	peak
7386.042	37.46	8.16	45.62	54	-8.38	AVG
Remark:	•					
Factor = Ante	enna Factor + Ca	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 and 802.11n20mimo mode is the worst case and recorded in the report.

# 12. BAND EDGE EMISSION

## **12.1. MEASUREMENT PROCEDURE**

Radiated restricted band edge measurements

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

#### 12.2. TEST SET-UP

same as 11.2

#### Note:

1. Factor=Antenna Factor + Cable loss - Amplifier gain. Field Strength=Factor + Reading level 2. The factor had been edited in the "Input Correction" of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB( $\mu$ V) to represent the Amplitude. Use the F dB( $\mu$ V/m) to represent the Field Strength. So A=F.

## 12.3. TEST RESULT

EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHZ	Antenna	Horizontal



AV

Keysight Spectrum A RF	50 Q AC		SENS	E:INT		ALIGN AUTO			
Marker 1 2.41	4220000000	PNO: Fast C	Trig: Free	Run	Avg Typ Avg Hold	e: RMS l:>100/100	TM4CI TYP		Peak Search
		IFGain:Low	#Atten: 10	dB			2.0		NextPea
odB/div Ref	106.99 dBµV	515	-11 - 1000			Mkr1	2.414 2 96.81	20 GHz 1 dBµV	Nextrea
.og 97.0							<b>0</b> 1		
17.0									Next Pk Rigi
77.0					1		1	<u> </u>	
67.0				/				Ť.	
57.0								$\lambda$	Next Pk Le
a7 0									
37.0		0 ²		50				5	
27.0		p							Marker Del
17.0									
Start 2.37000 (	GHz						Stop 2.42	500 GHz	
Res BW 1.0 M	AHz	#VB\	V 3.0 MHz*	ŝ.		Sweep 1	.000 ms (1	001 pts)	Mkr→C
MKR MODE TRC SCL	×		Ý	FUNCTIO	ON FU	NCTION WIDTH	FUNCTIO	N VALUE	
1 N 1 F 2 N 1 F	2.414	220 GHz 000 GHz	96.812 dBi 36,539 dBi						
3						_			Mkr→Ref L
5								-	
7									L
8									Mo
10									1 of
7 <b></b> -			<b>n</b> .	- 1					
80						STATUS	3		

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EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHZ	Antenna	Vertical





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EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHZ	Antenna	Horizontal





arker 1	2.460500		HZ PNO: Fast C FGain:Low	Trig: Free Rur #Atten: 10 dB	Avg	ALIGN AUTO Type: RMS loid:>100/100	TRAC	E A WWWWW A NNNN	Peak Search
dB/div	Ref 106.	99 dBµV				Mł	(r1 2.460 97.15	50 GHz 0 dBµV	Next Pea
70 70 70 70		<b>1</b>							Next Pk Righ
7.0						¢ ²			Next Pk Le
7.0					<b>\</b>	×	~~~~		Marker Delt
Res BW	5000 GHz 1.0 MHz		#VB	N 3.0 MHz*			Stop 2.50 1.000 ms (1	1001 pts)	Mkr→C
	AC SCL	× 2.460 2.483	50 GHz 50 GHz	Υ 97.147 dBμV 38.246 dBμV	FUNCTION	PUNCTION WIDT	TH FUNCTIO	IN VALUE	Mkr→RefL
7 8 9 0 1				<b>T</b> .					Mor 1 of
3				100 C		STAT		1000	

#### Report No.: AGC07248170702FE02 Page 86 of 104

EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHZ	Antenna	Vertical



AV

erker 1 2.46050		SENSE:INT	ALIGN AUTO Avg Type: RMS	TRACE 1 2 3 4 5 0	Peak Search
	PNO: Fast IFGain:Low	Trig: Free Run #Atten: 10 dB	AvgjHold:>100/100	TYPE A WWWWW DET A NNNNN	
0 dB/div Ref 106	i.99 dBµV		Mkr1	2.460 50 GHz 96.120 dBµV	Next Pea
97.0 17.0					Next Pk Rigi
77 0					_
57.0 47.0			0 ²		Next Pk Le
37.0					Marker Del
tart 2.45000 GHz Res BW 1.0 MHz	#VE	3W 3.0 MHz*	Sweep 1.0	op 2.50000 GHz 00 ms (1001 pts)	Mkr→C
AKR MODE TRC SCL	× 2.460 50 GHz 2.483 50 GHz	Y FL 96,111 dBµV 35,871 dBµV	NCTION FUNCTION WIDTH	FUNCTION VALUE	
				E -	Mkr⊸RefL
7 8 9					Mo 1 of
		按.		-	

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EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2412MHZ	Antenna	Horizontal
	РК		



AV

50.0 AC 75000000 GHz PNO East	SENSE:INT	Aug Type: RMS Avg Hold:>100/100		Peak Search
IFGain:Low	#Atten: 20 dB	Mkr1	2.415 375 GHz	Next Peal
0.39 UDµV			•1	Next Pk Righ
	2			Next Pk Le
				Marker Del
2 : #VI X			Stop 2.42500 GHz .000 ms (1001 pts)	Mkr→C
2.415 375 GHz 2.390 000 GHz	90.042 dBµV 36.638 dBµV			Mkr→RefL
				Mor 1 of
	7500000 GHz PNO: Fait If GainLow 6.99 dBµV 6.99 dBµV	75000000 GHz PNC: Frat IFGainLow 6.99 dBuV 6.99 dBuV 2. #VEW 3.0 MHz* 2. 2. 4.15 375 GHz 90.042 dBuV 90.042 dBuV	75000000 GHz         Avg Type: RMS           PRO Fast         Trig: Free Run           #Atten: 20 dB         Avg Type: RMS           6.99 dBµV         Mkr1           6.99 dBµV         Ø           Ø         Ø           Ø         Ø           Ø         Ø           Ø         Ø           Ø         Ø           Ø         Ø           Ø         Ø           Ø         Ø           Ø         Ø           Ø         Ø           Ø         Ø           Ø         Ø           Ø         Ø           Ø         Ø           Ø         Ø           Ø         Ø           Ø         Ø           Ø         Ø           Ø         Ø           Ø         Ø           Ø         Ø	75000000 GHz         GHz         Trig: Free Run #Atten: 20 dB         Avg Type: RMS Avg/Hold:>160/100         Tric: D = 343 Tric: D = 343 Avg/Hold:>160/100           6.99 dBµV         90.056 dBµV         90.056 dBµV         90.056 dBµV           8         8         8         8         90.056 dBµV           8         8         8         90.056 dBµV         90.056 dBµV           9         9         9         9         9         9         9           8         8         8         8         9         9         9           9         9         9         9         9         9         9         9         9           8         8         9         9         9         9         9         9         9           9         9         9         9         9         9         9         9         9         9

#### Report No.: AGC07248170702FE02 Page 88 of 104

EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2412MHZ	Antenna	Vertical



Peak Search	CC 123450	78.	ALIGN AUTO pe: RMS	Aug. 1	INT	SENSE	0.0-	Q AC			
	YPE A WWWWWW DET A NINININ	7	id:>100/100	Avgit	un B	Trig: Free R #Atten: 20 c	PNO: Fast	000000	41576	12	rker
NextPea	760 GHz 00 dBµV		Mkr1					99 dBµV	ef 106		iB/di
						T		os and per		_	
Next Pk Righ											
				F							
	- And										0 —
Next Pk Le											•
							$\Diamond^2$				
Marker Del											
											ō
	2500 GHz (1001 pts)	Stop 2.4							0 GHz		
Mkr→C					fortest and	3.0 MHz*	#VBW		) MHz		
	ION VALUE	FUNCI	UNCTION WIDTH	TION		89.814 dBu	760 GHz	× 2.415	f .		N
Mkr→RefL						37.104 dBu	000 GHz	2,390	1	1	N
	=										
									1		
Mor 1 of									1		
1.01	-										
	1.000	0	STATUS							_	_

#### Report No.: AGC07248170702FE02 Page 89 of 104

EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2462MHZ	Antenna	Horizontal
	РК		



AV

		SENSE;INT	ALIGN AUTO		Peak Search
arker 1 2.4582000000	PNO: Fast C	Trig: Free Run #Atten: 20 dB	Avg Type: RMS Avg Hold:>100/100	TYPE A WWWWW DET A NNNNN	rean Search
dB/div Ref 106.99 dBµ	v		Mkr1	2.458 20 GHz 90.955 dBµV	Next Pea
70 1 70					Next Pk Righ
70 70 70		- manage			Next Pk Le
70			Q ²		Marker Delt
7.0				top 2.50000 GHz	
tart 2.45000 GHz Res BW 1.0 MHz	#VBW	/ 3.0 MHz*	Sweep 1.00	00 ms (1001 pts)	Mkr→C
Res BW 1.0 MHz			Sweep 1.00	FUNCTION VALUE	
Res BW 1.0 MHz	458 20 GHz	Y FU 90.947 dBuV	Sweep 1.00	00 ms (1001 pts)	Mkr→C Mkr→RefL Mor 1 of

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EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2462MHZ	Antenna	Vertical



AV

AC SENSE:INT ALIGN AUTO	0 9
000000 GHz Avg Type: RMS TRACE 13 at a P PNO: Fast Trig: Free Run Avg Hold:>100/100 Trig: Avg Hold:>100/100 Det Avg Hold:>100/100 Det Avg Hold:	'eak Search
Мкr1 2.458 25 GHz dBµV 89.012 dBµV	NextPea
	lext Pk Rigi
	Next Pk Le
	Marker Del
Stop 2.50000 GHz #VBW 3.0 MHz* Sweep 1.000 ms (1001 pts)	Mkr→C
X Y FUNCTION FUNCTION WOTH FUNCTION VALUE * 2.453 25 GHz 88,969 dByV 2.453 50 GHz 38,159 dByV	Mkr→RefL

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EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 20 with data rate 6.5 2412MHZ	Antenna	Horizontal





SENSE:INT ALIGN AUTO Avg Type: RMS Trig: Free Run Avg Hold:>100/100	Peak Search
#Atten: 2000	allow the set
Mkr1 2.415 65 89.732	50 GHz 2 dBµV
	Next Pk Righ
	Next Pk Lei
	Marker Delt
Star 2.42	
Stop 2.42 W 3.0 MHz* Sweep 1.000 ms (1	1001 pts) Mkr→C
Y FUNCTION FUNCTION WIDTH FUNCTION	1.0000000000000000000000000000000000000
89,737 dBuV 37,271 dBuV	
37.271 0.000	Mkr→RefLy
	Mor
	1 of
π.	

#### Report No.: AGC07248170702FE02 Page 92 of 104

EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 20 with data rate 6.5 2412MHZ	Antenna	Vertical





	trum Anelyzer - S RF 00	Q AC	SENSE:IN		ALIGN AUTO		Peak Search
larker 1	2.415430	000000 GHz PNO: Fast IEGain:Low	Trig: Free Rur #Atten: 20 dB	n Avg	Type: RMS  Hold:>100/100	TRACE 1 2 TYPE A W DET A N	
0 dB/dly	Ref 106.9				Mkr1	2.415 430 88.255 d	GHZ NextPeal BuV
.0g 97.0							
iz a							Next Pk Righ
77.0				-			
67.0				1-			
57.0							Next Pk Lei
47:0			2				
37.0	-						
17.0							Marker Delt
Res BW		#VE	3W 3.0 MHz*		Sweep 1	Stop 2.42500 1.000 ms (1001	) GHz 1 pts) Mkr→C
KR MODE TR	C SCL	× 2,415 430 GHz	Y 88,212 dBuV	FUNCTION	FUNCTION WIDTH	FUNCTION VAL	UE 🏠
2 N 1		2.390 000 GHz	37.174 dBuV				
4							Mkr→RefL
5							
7 8							Mor
9							1 of
			<b>E</b> .			_	
90					STATU	18	

#### Report No.: AGC07248170702FE02 Page 93 of 104

EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 20with data rate 6.5 2462MHZ	Antenna	Horizontal





		SENSE:INT	ALIGN AUTO		Peak Search
larker 1 2.458250000000	DMO: East (	Trig: Free Run #Atten: 20 dB	Avg Type: RMS Avg Hold:>100/100	TYPE A WWWWW DET A NINININ	
0 dB/div Ref 106.99 dBµV			Mk	1 2.458 25 GHz 90.154 dBµV	NextPea
•g					Next Pk Righ
70 70 70		t			Next Pk Le
7.0			Q ²		Marker Dei
7.0					
tart 2.45000 GHz Res BW 1.0 MHz	#VBW 3	* 3.0 MHz*		Stop 2.50000 GHz 1.000 ms (1001 pts)	Mkr→C
Res BW 1.0 MHz           RF MODE TRC SCL         X           N         1         f         2.45           N         1         f         2.45           3         4         4         4	8 25 GHz		Sweep	1.000 ms (1001 pts)	
Res BW 1.0 MHz	8 25 GHz	Y FU		1.000 ms (1001 pts)	Mkr→C Mkr→RefL Moi 1 of

#### Report No.: AGC07248170702FE02 Page 94 of 104

EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 20 with data rate 6.5 2462MHZ	Antenna	Vertical





Keysight Spectrum RF	50.0 AC		SENSE:INT	ALIGN AUTO		Peak Search
arker 1 2.4	58250000000	PNO: Fast C	Trig: Free Run	Avg Type: RMS Avg Hold:>100/100	TRACE 2 3 4 5 0 TYPE A WWWWW DET A NNNNN	Peak Search
dB/div Re	f 106.99 dBµV			Mkr	2.458 25 GHz 88.903 dBµV	Next Peal
og 17.0 17.0						Next Pk Righ
70			L			Next Pk Le
7.0				²		Marker Del
tart 2.45000 Res BW 1.0		#VB1	W 3.0 MHz*	Sweep 1.	Stop 2.50000 GHz 000 ms (1001 pts)	Mkr→C
KR MODE TRC SCI	2.4	58 25 GHz 83 50 GHz	¥ 88.884 dBµV 38.679 dBµV	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	Mkr→RefL
5 6 7 8 9 0					E	Mor 1 of
1			11 ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) (			

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EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 40 with data rate 13.5 2422MHZ	Antenna	Horizontal



ý	RF 30		SENSE:IN		ALIGN AUTO		Peak Search
larker 1	2.427150	000000 GHz PNO: Fast IFGain:Low	Trig: Free Run #Atten: 20 dB		a Type: RMS  Hold:>100/100	TRACE 2 3 4 5 NOR A WWWWW DET A NN NN N	
0 dB/dlv	Ref 106.9	99 dBµV			Mkr1 2	.427 150 GHz 85.256 dBµV	NextPea
0g 97.0					•1		Next Pk Righ
77.0	_		F	111-11			
67.0 57.0							Next Pk Le
47.0 37.0		2 2					
27.0 17.0							Marker Del
tart 2.37 Res BW		#VE	3W 3.0 MHz*		Sweep 1.0	top 2.44500 GHz 00 ms (1001 pts)	Mkr→C
	C SCL	× 2.427 150 GHz	Y 85.256 dBuV	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	
2 N 1 3 4 5		2.390 000 GHz	39.032 dBµV			E	Mkr→RefL
6 7 8							Mor
9							1 of

#### Report No.: AGC07248170702FE02 Page 96 of 104

EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 40 with data rate 13.5 2422MHZ	Antenna	Vertical





0.9		ALIGN AUTO	a l	SENSE:INT			m Anelyzer - 3 RF 50		Keysight
Peak Search	TRACE 2 3 4 5 0 TYPE A WWWW N	Type: RMS Hold:>100/100	Ave	Trig: Free Run #Atten: 20 dB	Z O:Fast G ain:Low	000000 GH			rker
GHZ NextPe BµV	2.425 875 GHz 84.754 dBµV	Mkr1 2				9 dBµV	tef 106.9	R	dB/dlv
Next Pk Rig		<b>●</b> 1							
				T					
Next Pk L						2 ²			.a
Marker De									0 0
GHz pts) Mkr→0	top 2.44500 GHz 00 ms (1001 pts)	S Sweep 1.0		3.0 MHz*	#VB\		0 GHz ) MHz		
	FUNCTION VALUE	FUNCTION WIDTH	FUNCTION	Y 84.774 dBuV	GHZ	× 2.425 875		1	R MODE
Mkr→RefL	=			37.865 dBµV	GHZ	2.390 000			N
Mo									
- -	-			#.					
		STATUS							l.

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EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 40 with data rate 13.5 2452MHZ	Antenna	Horizontal





		SENSE:INT	ALIGN AUTO		Peak Search
larker 1 2.45597000000	PNO: Fast G IFGain:Low	Trig: Free Run #Atten: 20 dB	Avg Type: RMS Avg Hold:>100/100	TYPE A WWWWW DET A NNNN N	
D dB/div Ref 106.99 dBµ\	v		Mkr1	2.455 97 GHz 85.634 dBµV	Next Pea
99 37.0	• ¹				Next Pk Righ
70					
i7.0			\$ ²		Next Pk Le
70					Marker Del
tart 2.43000 GHz Res BW 1.0 MHz	#VBW	V 3.0 MHz*	Sweep 1.00	op 2.50000 GHz )0 ms (1001 pts)	Mkr→C
tart 2.43000 GHz Res BW 1.0 MHz	#VBW 155 97 GHz 183 50 GHz		St Sweep 1.00	op 2.50000 GHz 00 ms (1001 pts) FUNCTION VALUE	
tart 2.43000 GHz Res BW 1.0 MHz M MODE TRC SOL X N 1 7 2.4 S 5	155 97 GHz	Y F 85.653 dBuV	Sweep 1.00	00 ms (1001 pts)	
tart 2.43000 GHz Res BW 1.0 MHz KR MODE TRC SCL X 1 N 1 f 2.4 2 N 1 f 2.4 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	155 97 GHz	Y F 85.653 dBuV	Sweep 1.00	00 ms (1001 pts)	Mkr→C Mkr→RefL Mor 1 of

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EUT	RouterBOARD cAP Gi-5acD2nD	Model Name	cAP ac					
Temperature	25°C	Relative Humidity	55.4%					
Pressure	960hPa	Test Voltage	Normal Voltage					
Test Mode	802.11n 40 with data rate 13.5 2452MHZ	Antenna	Vertical					
PK								







Note: Two transmit chains had been tested, the chain 0 was the worst case and record in the test report.

# **13. FCC LINE CONDUCTED EMISSION TEST**

# **13.1. LIMITS OF LINE CONDUCTED EMISSION TEST**

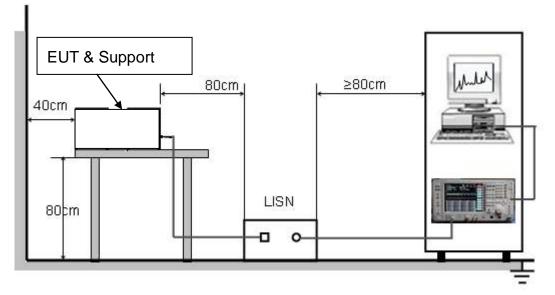
Frequency	Maximum RF Line Voltage						
Frequency	Q.P.( dBuV)	Average( dBuV)					
150kHz~500kHz	66-56	56-46					
500kHz~5MHz	56	46					
5MHz~30MHz	60	50					

Note:

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

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

## 13.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



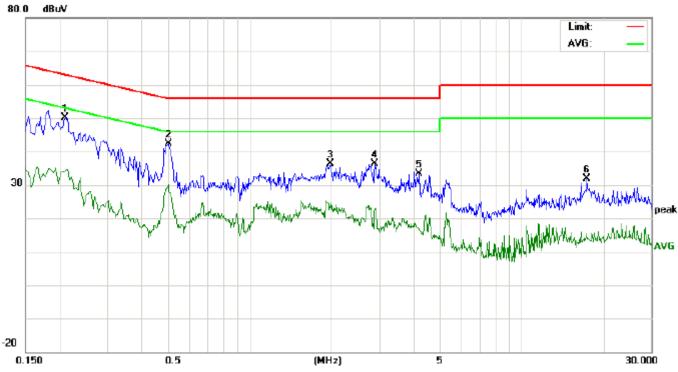
## 13.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

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

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

#### 13.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

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

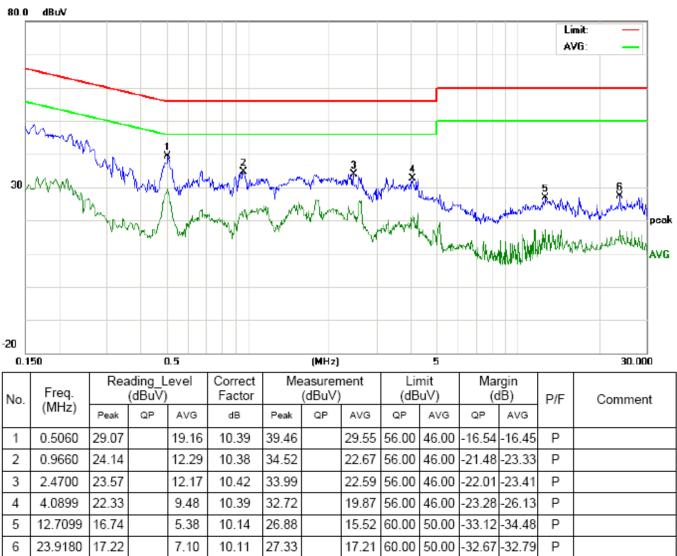


#### 13.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

-20 0.1	150			0.5			(MHz)	)		5				30.000				
No.	Freq.	Rea	Reading_L (dBuV)		Correct Factor	Me	Measurement (dBuV)		Limit (dBuV)							Margin (dB)		Comment
	(MHz)	Peak	QP	AVG	dB	Peak	QP	AVG	QP	AVG	QP	AVG						
1	0.2100	39.95		24.08	10.23	50.18		34.31	63.20	53.20	-13.02	-18.89	Р					
2	0.5020	32.03		19.68	10.40	42.43		30.08	56.00	46.00	-13.57	-15.92	Р					
3	1.9860	26.22		13.85	10.22	36.44		24.07	56.00	46.00	-19.56	-21.93	Р					
4	2.8980	25.89		12.01	10.53	36.42		22.54	56.00	46.00	-19.58	-23.46	Р					
5	4.2139	23.04		6.46	10.34	33.38		16.80	56.00	46.00	-22.62	-29.20	Р					
6	17.4619	21.70		5.27	10.13	31.83		15.40	60.00	50.00	-28.17	-34.60	Р					

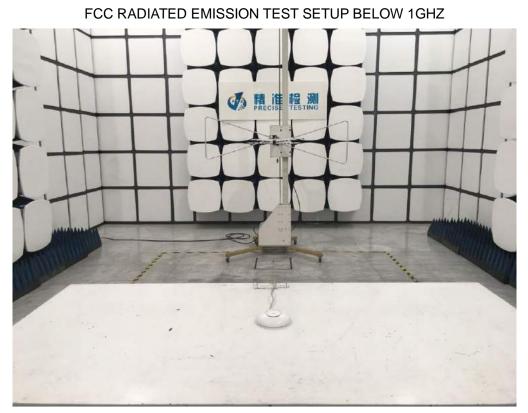
# LINE CONDUCTED EMISSION TEST-L

#### **RESULT: PASS**



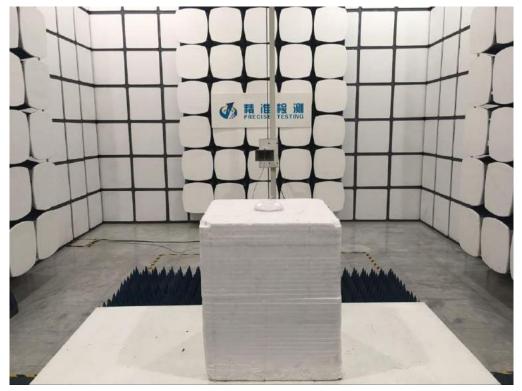
#### LINE CONDUCTED EMISSION TEST-N

#### **RESULT: PASS**



# APPENDIX A: PHOTOGRAPHS OF TEST SETUP

FCC RADIATED EMISSION TEST SETUP ABOVE 1GHZ





FCC LINE CONDUCTED EMISSION TEST SETUP

----END OF REPORT----