# FCC Test Report

# Report No.: AGC10288170701FE04

FCC ID	:	2AM9IPI0I0MT000100
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	Master Target
BRAND NAME	:	IOTargeting
MODEL NAME	:	PI0IOMT000100
CLIENT	:	IoTargeting, LLC.
DATE OF ISSUE	:	July 11, 2017
STANDARD(S) TEST PROCEDURE(S)	:	FCC Part 15.247 KDB 558074 D01 DTS Meas Guidance v04
<b>REPORT VERSION</b>	:	V1.0



## CAUTION:

This report shall not be reproduced except in full without the written permission of the test laboratory and shall not be quoted out of context.



# **Report Revise Record**

<b>Report Version</b>	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	July 11, 2017	Valid	Original Report

## TABLE OF CONTENTS

1. VERIFICATION OF CONFORMITY	5
2. GENERAL INFORMATION	6
2.1. PRODUCT DESCRIPTION	6
2.2. TABLE OF CARRIER FREQUENCYS	6
2.3. IEEE 802.11N MODULATION SCHEME	7
2.4. RELATED SUBMITTAL(S) / GRANT (S)	7
2.5. TEST METHODOLOGY	7
2.6. SPECIAL ACCESSORIES	
2.7. EQUIPMENT MODIFICATIONS	
3. MEASUREMENT UNCERTAINTY	9
4. DESCRIPTION OF TEST MODES	9
5. SYSTEM TEST CONFIGURATION	
5.1. CONFIGURATION OF EUT SYSTEM	
5.2. EQUIPMENT USED IN EUT SYSTEM	
5.3. SUMMARY OF TEST RESULTS	
6. TEST FACILITY	
7. OUTPUT POWER	
7.1. MEASUREMENT PROCEDURE	
7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	12
7.3. LIMITS AND MEASUREMENT RESULT	
8. 6 DB BANDWIDTH	14
8.1. MEASUREMENT PROCEDURE	14
8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	14
8.3. LIMITS AND MEASUREMENT RESULTS	
9. CONDUCTED SPURIOUS EMISSION	21
9.1. MEASUREMENT PROCEDURE	21
9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	21
9.3. MEASUREMENT EQUIPMENT USED	
9.4. LIMITS AND MEASUREMENT RESULT	21
10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY	

## Report No.: AGC10288170701FE04 Page 4 of 70

10.1 MEASUREMENT PROCEDURE	
10.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	
10.3 MEASUREMENT EQUIPMENT USED	
10.4 LIMITS AND MEASUREMENT RESULT	
11. RADIATED EMISSION	43
11.1. MEASUREMENT PROCEDURE	
11.2. TEST SETUP	
11.3. LIMITS AND MEASUREMENT RESULT	45
11.4. TEST RESULT	45
12. BAND EDGE EMISSION	51
12.1. MEASUREMENT PROCEDURE	
12.2. TEST SET-UP	51
12.3. TEST RESULT	
APPENDIX A: PHOTOGRAPHS OF TEST SETUP	64
APPENDIX B: PHOTOGRAPHS OF EUT	65

Applicant	IoTargeting, LLC.		
Address	511 N Washington Ave, Marshall, Texas, USA 75670.		
Manufacturer	System Level Solutions (India) Pvt. Ltd.		
Address	Plot#32, Zone-D/4, Phase-1, GIDC Estate, V.U. Nagar - 388 121, Gujarat, India		
Product Designation	Master Target		
Brand Name	IOTargeting		
Test Model	PI0IOMT000100		
Date of test	July 08, 2017 to July 11, 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.

Now 2hang Tested by Max Zhang(Zhang Yi) July 11, 2017 BOR Nie Reviewed by Bart Xie(Xie Xiaobin)) July 11, 2017 Approved by Solger Zhang(Zhang Hongyi) July 11, 2017 Authorized Officer

## 2. GENERAL INFORMATION

#### 2.1. PRODUCT DESCRIPTION

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

Operation Frequency	2.412 GHz~2.462GHz
Output Power	IEEE 802.11b: <b>9.33</b> dBm; IEEE 802.11g: <b>7.74</b> dBm; IEEE 802.11n(20): <b>7.54</b> dBm
Modulation DSSS(DBPSK/DQPSK/CCK);OFDM(BPSK/QPSK/16-QAM/64-QAM)	
Number of channels	11
Hardware Version	V1.0
Software Version	V1.0
Antenna Designation	Fixed Antenna (Met 15.203 Antenna requirement)
Antenna Gain	2dBi
Power Supply	DC 6V by battery

A major technical description of EUT is described as following

#### 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

MCS Index	Nss	Modulation	R	NBPSC	NCBPS				rate(I	ata //bps) 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: 2AM9IPI0IOMT000100** 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: Transm	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)

#### 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

ltem	Equipment	Model No.	ID or Specification	Remark
1	Master Target	PI0IOMT000100	2AM9IPI0IOMT000100	EUT

#### 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

## 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 4, 2017	July 3, 2018
Trilog Broadband Antenna (25M-1GHz)	SCHWARZBECK	VULB9160	9160-3355	July 4, 2017	July 3, 2018
Signal Amplifier	SCHWARZBECK	BBV 9475	9745-0013	July 4, 2017	July 3, 2018
RF Cable	SCHWARZBECK	AK9515E	96221	July 4, 2017	July 3, 2018
3m Anechoic Chamber	CHENGYU	966	PTS-001	July 4, 2017	July 3, 2018
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 2, 2017	June 1, 2018
Horn Antenna (1G-18GHz)	SCHWARZBECK	BBHA9120D	9120D-1246	June 2, 2017	June 1, 2018
Horn Ant (18G-40GHz)	Schwarzbeck	BBHA 9170	9170-181	June 2, 2017	June 1, 2018

## 7. OUTPUT POWER

## 7.1. MEASUREMENT PROCEDURE

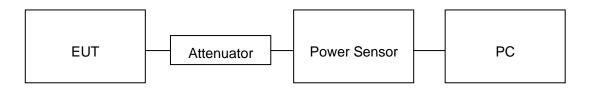
For average power test:

- 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

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	9.24	30	Pass
2.437	9.33	30	Pass
2.462	9.15	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	7.74	30	Pass
2.437	7.68	30	Pass
2.462	7.71	30	Pass

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

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	7.15	30	Pass
2.437	7.33	30	Pass
2.462	7.54	30	Pass

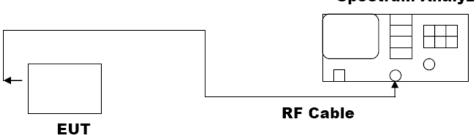
## 8.6 DB BANDWIDTH

#### 8.1. MEASUREMENT PROCEDURE

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

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

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



#### **Spectrum Analyzer**

## 8.3. LIMITS AND MEASUREMENT RESULTS

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

LIMITS AND MEASUREMENT RESULT				
Anniisekie Limite	Applicable Limits			
Applicable Limits	Test Data (MHz)		Criteria	
>500KHZ	Low Channel	8.320	PASS	
	Middle Channel	7.727	PASS	
	High Channel	8.236	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	16.38	PASS	
	Middle Channel	16.40	PASS	
	High Channel	16.39	PASS	

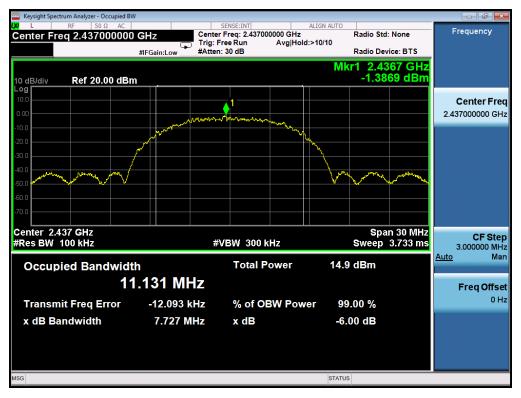
TEST ITEM	6DB BANDWIDTH
TEST MODE	802.11n 20 with data rate 65

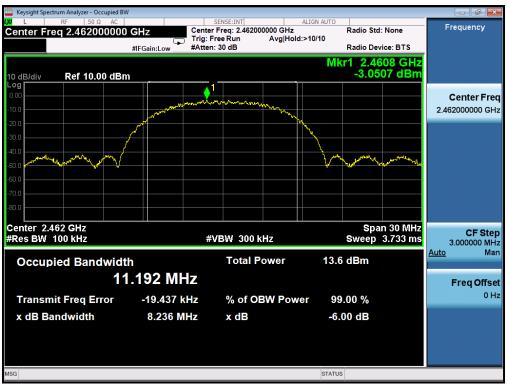
LIMITS AND MEASUREMENT RESULT					
Applicable Limite		Applicable Limits			
Applicable Limits	Test Data (MHz) Criteria				
	Low Channel	17.62	PASS		
>500KHZ	Middle Channel	17.64	PASS		
	High Channel	17.62	PASS		



#### 802.11b TEST RESULT TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



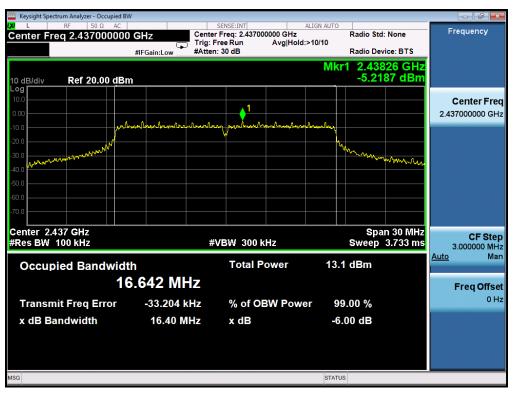


#### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

## 802.11g TEST RESULT

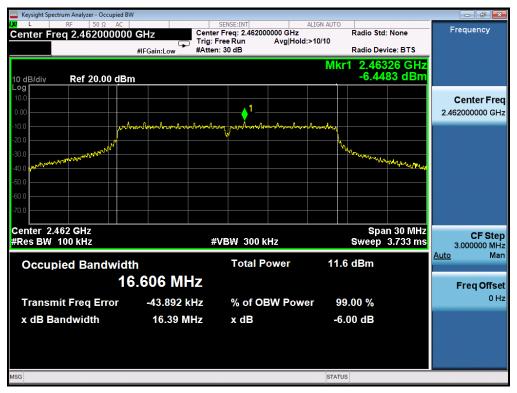
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

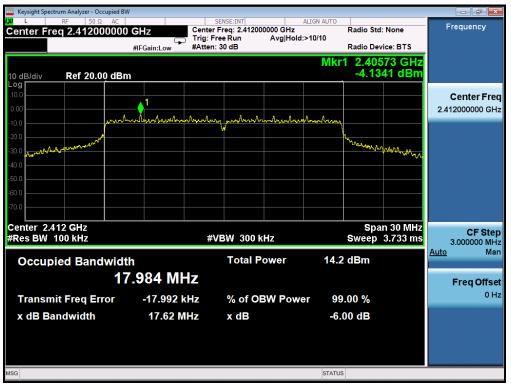
🔤 Keysight Spectrum Analyzer - Occupied BW				
L     RF     S0 Ω AC     Center Freq 2.412000000	GHz Center F	req: 2.412000000 GHz	Radio Std: None	Frequency
	#IFGain:Low #Atten:		Radio Device: BTS	;;
10 dB/div Ref 10.00 dBm			Mkr1 2.41326 G -3.5828 dE	
0.00	adaestambara	1 Junhanlasahanhun	hundag	Center Freq 2.412000000 GHz
-20.0 -30.0 mm/m/mm/mm/m/m/m/m/m/m/m/m/m/m/m/m/m/m			have the show the sho	<b>V</b> 70.
-50.0				
-70.0				
Center 2.412 GHz #Res BW 100 kHz	#V	BW 300 kHz	Span 30 M Sweep 3.733	ms 3.000000 MHz
Occupied Bandwidth	ı	Total Power	14.3 dBm	<u>Auto</u> Man
16	.838 MHz			Freq Offset
Transmit Freq Error	-72.340 kHz	% of OBW Powe	r 99.00 %	0 Hz
x dB Bandwidth	16.38 MHz	x dB	-6.00 dB	
MSG			STATUS	



#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



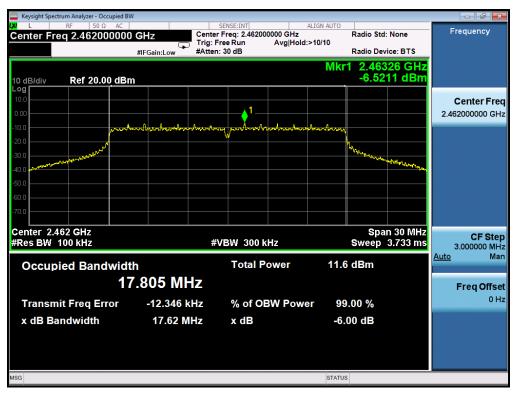


#### 802.11n (20) TEST RESULT

#### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

Keysight Spectrum Analyzer - Occupied BW					
Center Freq 2.437000000		SENSE:INT er Freq: 2.437000000 GHz		Radio Std: None	Frequency
	Trig:	Free Run Avg Hol n: 30 dB		Radio Device: BTS	
,	si dameon		Mkr1	2.43073 GHz	1
10 dB/div Ref 20.00 dBm				-5.5633 dBm	
10.0					Center Freq
0.00	<sup>1</sup>				2.437000000 GHz
-10.0 provla	an haven have almost a south	my pumbranamana	satrantersony		
-20.0		ч 	k	A	
-30.0				Mr. Martiner	
-40.0					
-50.0					
-60.0			+		-
-70.0					-
Center 2.437 GHz				Span 30 MHz	
#Res BW 100 kHz	#	VBW 300 kHz		Sweep 3.733 ms	3.000000 MHz
Occupied Bandwidtl	h	Total Power	12.7	dBm	<u>Auto</u> Man
	.842 MHz				
					Freq Offset
Transmit Freq Error	-9.029 kHz	% of OBW Pow	/er 99.	00 %	0 Hz
x dB Bandwidth	17.64 MHz	x dB	-6.0	0 dB	
MSG			STATUS		



#### 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)

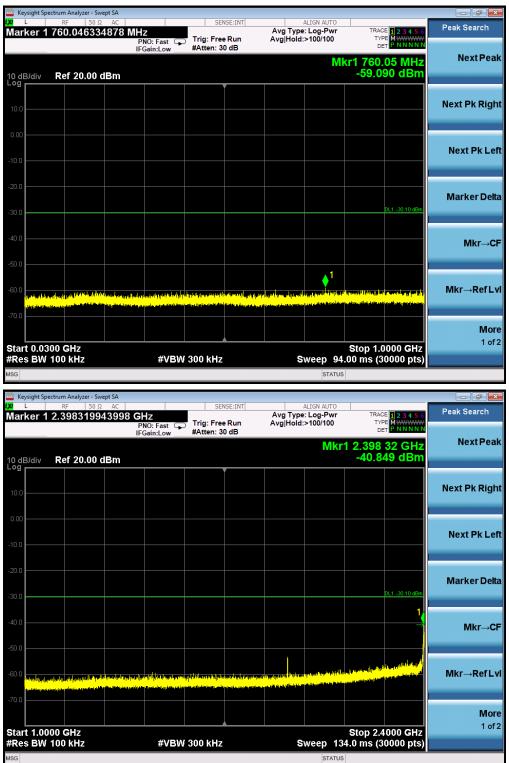
The same as described in section 8.2.

#### 9.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.

#### 9.4. LIMITS AND MEASUREMENT RESULT

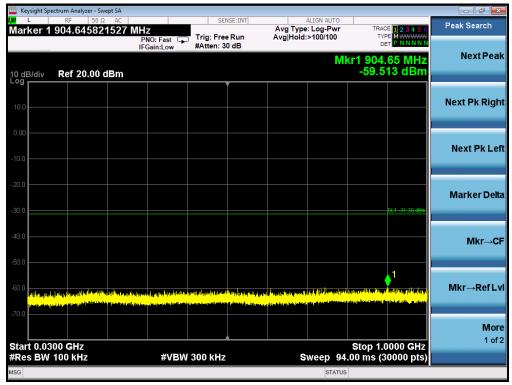
LIMITS AND MEASUREMENT RESULT						
Applieghte Limite	Measurement Result					
Applicable Limits	Test Data	Criteria				
In any 100 KHz Bandwidth Outside the	At least -30dBc than the limit					
frequency band in which the spread spectrum	Specified on the BOTTOM	PASS				
intentional radiator is operating, 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				



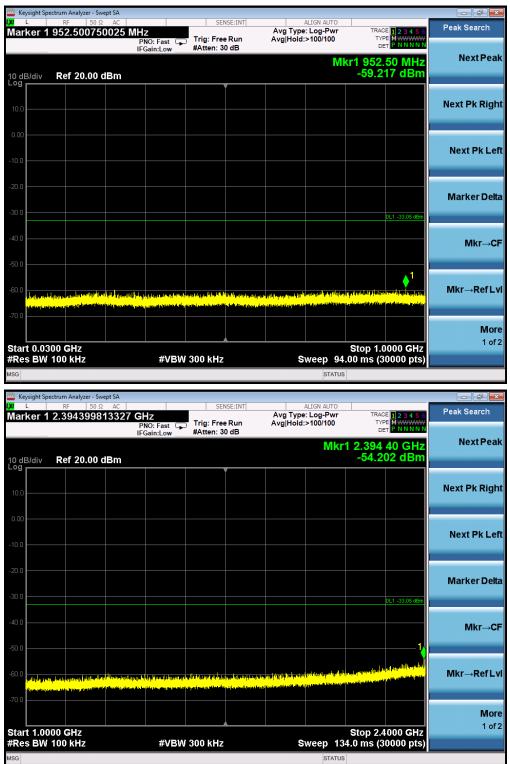
#### TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF 802.11b FOR MODULATION IN LOW CHANNEL

🚾 Keysight Spectrum Analyzer - Swep					
₩ L RF 50 Ω Marker 1 24.99549654	AC 49885 GHz PNO: Fast IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE M WWWW DET P N N N N N	Peak Search
10 dB/div Ref 20.00 dE		#Atten: 30 ub	Mkr1	24.995 5 GHz -38.015 dBm	Next Peak
10.0					Next Pk Righ
-10.0					Next Pk Lef
-20.0				DL1 -30.10 dBm	Marker Delta
-40.0	littlessing and and a stressing and	المالية والمواد والمراجع			Mkr→CF
-60.0					Mkr→RefLv
Start 2.48 GHz #Res BW 1.0 MHz	#VBW	3.0 MHz	Sweep 58.	Stop 25.00 GHz 00 ms (30000 pts)	More 1 of 2
MSG			STATUS		

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



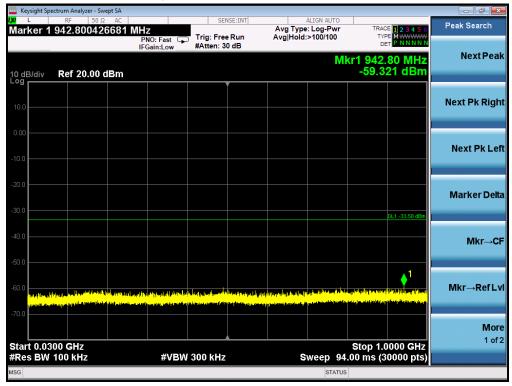
Keysight Sp L		0Ω AC		SENS	E:INT		ALIGN AUTO			Book Soorah
arker 1	1 2.373119	0103970		Trig: Free F	Run	Avg Type Avg Hold	: Log-Pwr :>100/100	TRAC	E 123456 E MWWWW	Peak Search
			PNO: Fast IFGain:Low	#Atten: 30		31.1010				No. 4 P
							Mkr1	2.373	12 GHz	NextPea
dB/div	Ref 20.0	0 dBm						-55.2	06 dBm	
-				Ĭ						
.0										Next Pk Rig
.0										Next Pk Lo
.0										
										Marker De
.0									DL1 -31.39 dBm	
										Mkr→
o 🗕 🗕									1	
0 <mark>Jalasan</mark>	the Disulated business and	in the deliver of the	de antique providence de la compañía	A THE PROPERTY OF THE PROPERTY	land a feather all the	ultrander distribu	engendes auf Hingdon de Angel	na dalah mulaliya Manangan dalah mulaliya	And the second states	Mkr→RefL
also (Marile	- And Ly I was been all a look	in a liter manufacture parties and the	1 ja se intérésée et l'actuel d'an i	and a state of the second s	na), comenta a data	end gran dividing and take	and the second secon			
										Мс 1 с
art 1.00	000 CHz							Stop 2.4	1000 CHz	
ee BM			#\/P\M	300 647			woon 13	0 mc /3	(0000 GHZ	
	pectrum Analyzer	Swept SA 0 Ω AC	#VBW	300 kHz	E:INT		STATUS	1.0 ms (3	:0000 pts)	
i Keysight Sp L	pectrum Analyzer	0Ω AC	) GHz	SENS	Run		STATUS	1.0 ms (3	:0000 pts) ≅ 112 3 4 5 6	Peak Search
Keysight Sp L	pectrum Analyzer - RF 5	0Ω AC		SENS	Run	Avg Type	ALIGN AUTO 2: Log-Pwr 2:100/100	I.0 ms (3	E 1 2 3 4 5 6 MWWWW T P NNNN	Peak Search
Keysight Sp L arker 1	100 kHz	0 Ω AC 29660989	) GHz PNO: Fast 😱	SENS	Run	Avg Type	ALIGN AUTO 2: Log-Pwr 2:100/100	1.0 ms (3	E 123456 NNNNN 1 3 GHz	Peak Search
Keysight Sp L arker 1	pectrum Analyzer - RF 5	0 Ω AC 29660989	) GHz PNO: Fast 😱	SENS	Run	Avg Type	ALIGN AUTO 2: Log-Pwr 2:100/100	1.0 ms (3	E 1 2 3 4 5 6 MWWWW T P NNNN	Peak Search
Keysight Sp L arker 1 dB/div	100 kHz	0 Ω AC 29660989	) GHz PNO: Fast 😱	SENS	Run	Avg Type	ALIGN AUTO 2: Log-Pwr 2:100/100	1.0 ms (3	E 123456 NNNNN 1 3 GHz	Peak Search Next Pea
Keysight Sp L arker 1 dB/div	100 kHz	0 Ω AC 29660989	) GHz PNO: Fast 😱	SENS	Run	Avg Type	ALIGN AUTO 2: Log-Pwr 2:100/100	1.0 ms (3	E 123456 NNNNN 1 3 GHz	Peak Search Next Pe
dB/div	100 kHz	0 Ω AC 29660989	) GHz PNO: Fast 😱	SENS	Run	Avg Type	ALIGN AUTO 2: Log-Pwr 2:100/100	1.0 ms (3	E 123456 NNNNN 1 3 GHz	Peak Search Next Pe
dB/div	100 kHz	0 Ω AC 29660989	) GHz PNO: Fast 😱	SENS	Run	Avg Type	ALIGN AUTO 2: Log-Pwr 2:100/100	1.0 ms (3	E 123456 NNNNN 1 3 GHz	Peak Search Next Pe Next Pk Rig
Keysight Sp	100 kHz	0 Ω AC 29660989	) GHz PNO: Fast 😱	SENS	Run	Avg Type	ALIGN AUTO 2: Log-Pwr 2:100/100	1.0 ms (3	E 123456 NNNNN 1 3 GHz	Peak Search Next Pea Next Pk Rig
dB/div	100 kHz	0 Ω AC 29660989	) GHz PNO: Fast 😱	SENS	Run	Avg Type	ALIGN AUTO 2: Log-Pwr 2:100/100	1.0 ms (3	E 123456 NNNNN 1 3 GHz	Peak Search Next Pe Next Pk Rig
dB/div	100 kHz	0 Ω AC 29660989	) GHz PNO: Fast 😱	SENS	Run	Avg Type	ALIGN AUTO 2: Log-Pwr 2:100/100	1.0 ms (3	E 123456 NNNNN 1 3 GHz	Peak Search Next Pe Next Pk Rig Next Pk Li
dB/div	100 kHz	0 Ω AC 29660989	) GHz PNO: Fast 😱	SENS	Run	Avg Type	ALIGN AUTO 2: Log-Pwr 2:100/100	1.0 ms (3	E 123456 NNNNN 1 3 GHz	Peak Search Next Pea Next Pk Rig Next Pk Lu
dB/div	100 kHz	0 Ω AC 29660989	) GHz PNO: Fast 😱	SENS	Run	Avg Type	ALIGN AUTO 2: Log-Pwr 2:100/100	1.0 ms (3	E 123456 E 123456 E M NNNN 1 3 GHz 22 dBm	Peak Search Next Pea Next Pk Rig Next Pk Lu
dB/div 0 0	100 kHz	0 Ω AC 29660989	) GHz PNO: Fast 😱	SENS	Run	Avg Type	ALIGN AUTO 2: Log-Pwr 2:100/100	1.0 ms (3	E 123456 E 123456 E M NNNN 1 3 GHz 22 dBm	Peak Search Next Pea Next Pk Rig Next Pk Lu Marker De
dB/div	2 100 kHz RF 5 5 1 24.45132 Ref 20.0	0 2 AC 29660989 0 dBm	) GHZ PNO: Fast IFGain:Low	SENS	Run	Avg Type Avg Hold	ALIGN AUTO 2: Log-Pwr 2:100/100	1.0 ms (3	E 123456 E 123456 E M NNNN 1 3 GHz 22 dBm	Peak Search Next Pe Next Pk Rig Next Pk Li Marker De
dB/div g 0 0 0	2 100 kHz RF 5 5 1 24.45132 Ref 20.0	0 Ω AC 29660989	) GHZ PNO: Fast IFGain:Low	SENS Trig: Free J #Atten: 30	Run	Avg Type Avg Hold	ALIGN AUTO :: Log-Pwr :>100/100 MIKT1	1.0 ms (3	E 123456 E 123456 E M NNNN 1 3 GHz 22 dBm	Peak Search Next Pe Next Pk Rig Next Pk Li Marker De
dB/div g 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2 100 kHz RF 5 5 1 24.45132 Ref 20.0	0 2 AC 29660989 0 dBm	) GHZ PNO: Fast IFGain:Low	SENS Trig: Free J #Atten: 30	Run	Avg Type Avg Hold	ALIGN AUTO :: Log-Pwr :>100/100 MIKT1	1.0 ms (3	E 123456 E 123456 E M NNNN 1 3 GHz 22 dBm	Peak Search Next Pea Next Pk Rig Next Pk Lu Marker De Mkr→0
i Keysight Sp L	2 100 kHz RF 5 5 1 24.45132 Ref 20.0	0 2 AC 29660989 0 dBm	) GHZ PNO: Fast IFGain:Low	SENS Trig: Free J #Atten: 30	Run	Avg Type Avg Hold	ALIGN AUTO :: Log-Pwr :>100/100 MIKT1	1.0 ms (3	E 123456 E 123456 E M NNNN 1 3 GHz 22 dBm	Peak Search Next Pea Next Pk Rig Next Pk Lu Marker De Mkr→C
dB/div g arker 1 dB/div g dB/div g dB/div g dB/div	2 100 kHz RF 5 5 1 24.45132 Ref 20.0	0 2 AC 29660989 0 dBm	) GHZ PNO: Fast IFGain:Low	SENS Trig: Free J #Atten: 30	Run	Avg Type Avg Hold	ALIGN AUTO :: Log-Pwr :>100/100 MIKT1	1.0 ms (3	E 123456 E 123456 E M NNNN 1 3 GHz 22 dBm	Peak Search Next Pea Next Pk Rig Next Pk Lu Marker De Mkr→0
Keysight Sp arker 1 arker 1 0 0 0 0 0 0 0 0	2 100 kHz RF 5 5 1 24.45132 Ref 20.0	0 2 AC 29660989 0 dBm	) GHZ PNO: Fast IFGain:Low	SENS Trig: Free J #Atten: 30	Run	Avg Type Avg Hold	ALIGN AUTO :: Log-Pwr :>100/100 MIKT1	1.0 ms (3	E 123456 E 123456 E M NNNN 1 3 GHz 22 dBm	Peak Search Next Pea Next Pk Rig Next Pk Lu Marker De Mkr→Ref L Mo
dB/div a a a b	2 100 kHz	0 2 AC 29660989 0 dBm	) GHZ PNO: Fast IFGain:Low	SENS Trig: Free J #Atten: 30	Run	Avg Type Avg Hold:	ALIGN AUTO :: Log-Pwr :> 100/100 MIKT1	1.0 ms (3	5.00 GHz	Peak Search Next Pea Next Pk Rig Next Pk Lu Marker De Mkr→Ref L Mo
dB/div           g           arker 1           0	100 kHz	0 2 AC 29660989 0 dBm	) GHz PNO: Fast IFGain:Low	SENS Trig: Free J #Atten: 30	Run	Avg Type Avg Hold:	ALIGN AUTO :: Log-Pwr :>100/100 MIKT1	1.0 ms (3	5.00 GHz	Peak Search Next Pea Next Pk Rig Next Pk Lu Marker De Mkr→C



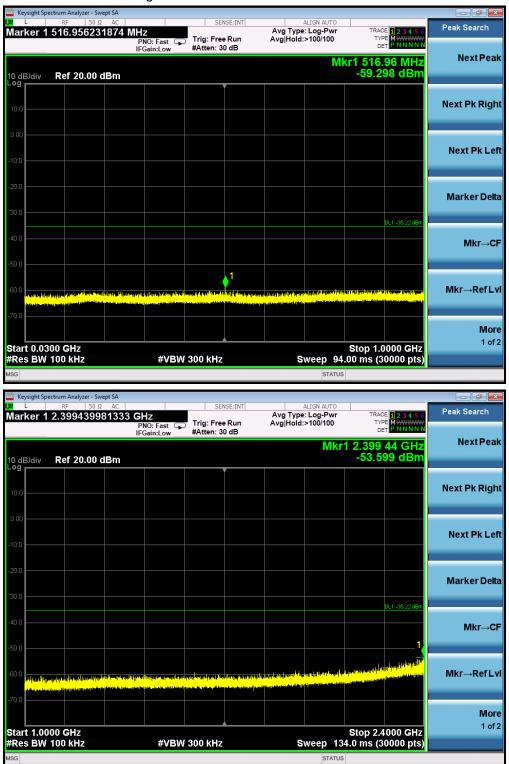
## TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11b FOR MODULATION IN HIGH CHANNEL



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



Keysight Spe	RF 50 Ω AC		SEN	SE:INT		ALIGN AUTO			Peak Search
larker 1	2.3985999533	32 GHz PNO: Fast (	Trig: Free		Avg Type Avg Hold	e: Log-Pwr :>100/100	TRAC TYP	E 1 2 3 4 5 6 E M WWWW P N N N N N	I eak Search
) dB/div	Ref 20.00 dBm	IFGain:Low	#Atten: 30	dB		Mkr1	2.398	60 GHz 09 dBm	Next Pe
10.0									Next Pk Rig
0.00									Next Pk Lo
0.0									Marker De
0.0								DL1 -33.58 dBm 1	
io.o									Mkr→C
		i den han og her og bereget har sløtte bland. Na sløtte som sløtte blande	nen allan errar nen signafik Senter signafik	ayayya <mark>mang bilang ang bilang ang bilang bilang Talang sang bilang bi</mark>		ر میلیا (منباع میں اس م ارتباط میں میں میں اس م			Mkr→RefL
70.0									Мо
tart 1.00		<i>#</i> ) (5)					Stop 2.4	000 GHz	1 0
	100 kHz	#VB	W 300 kHz		5	status	r.n ws (a	uuuu pts)	
Kauriaht Car									
	actrum Applyzer - Swept SA								
L	ectrum Analyzer - Swept SA RF 50 Ω AC 24 976732174		SEN	SE:INT		ALIGN AUTO	TRAC	<b>12345</b> 6	Peak Search
L				Run	Avg Type	ALIGN AUTO 2: Log-Pwr :>100/100	TRAC TYP DE	E <b>1 2 3 4 5</b> 6 E M <del>WWWW</del> T P N N N N	Peak Search
arker 1	RF 50 Ω AC	406 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	24.97		Peak Search
larker 1	RF 50 Ω AC 24.976732174	406 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	24.97	7 GHz	Peak Search Next Pe
larker 1	RF 50 Ω AC 24.976732174	406 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	24.97	7 GHz	Peak Search Next Pea Next Pk Rig
arker 1	RF 50 Ω AC 24.976732174	406 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	24.97	7 GHz	Peak Search Next Pea Next Pk Rig
0 dB/div 99	RF 50 Ω AC 24.976732174	406 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	24.97	7 GHz	Peak Search Next Pea Next Pk Rig Next Pk Lo
odB/div og 0.00 0.0 0.0 0.0 0.0 0.0	RF 50 Ω AC 24.976732174	406 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type	e: Log-Pwr :>100/100	24.97	7 GHz	Peak Search Next Pea Next Pk Rig Next Pk Lu
arker 1 o dB/div o g 0.00 0.00 0.00 0.00 0.00 0.00 0.00	RF 50 Ω AC 24.976732174	406 GHz PNO: Fast IFGain:Low	Trig: Free	Run	Avg Type Avg Hold	:: Log-Pwr :>100/100 Mikr1	24.97	57 GHz 80 dBm	Peak Search Next Pea Next Pk Rig Next Pk Lu Marker De
arker 1 odB/div og 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	RF 50 Ω AC 24.976732174	406 GHz PNO: Fast IFGain:Low	Trig: Free	Run dB	Avg Type Avg Hold	: Log-₽wr :>100/100 Mkr1	24.970	57 GHz 80 dBm	Peak Search Next Pe Next Pk Rig Next Pk Lu Marker De Mkr→0
arker 1           odB/div           og           0.00	RF 50 Ω AC 24.976732174	406 GHz PNO: Fast IFGain:Low	Trig: Free	Run dB	Avg Type Avg Hold	:: Log-Pwr :>100/100 Mikr1	24.970	57 GHz 80 dBm	Peak Search Next Pea Next Pk Rig Next Pk Lu Marker De Mkr→C
D dB/div g 0.00	Ref 20.00 dBm	406 GHz PNO: Fast IFGain:Low	Trig: Free	Run dB	Avg Type Avg Hold	:: Log-Pwr :>100/100 Mikr1	24.97(	57 GHz 80 dBm	Peak Search Next Pea Next Pk Rig Next Pk Lo Marker De Mkr→C Mkr→Ref L
0         dB/div           0         dB/div <td>Ref 20.00 dBm</td> <td>406 GHz PNO: Fast IFGain:Low</td> <td>Trig: Free</td> <td>Run dB</td> <td>Avg Type Avg Hold</td> <td>:: Log-Pwr :&gt;100/100 Mikr1</td> <td>24.976 -38.4</td> <td>5.00 GHz</td> <td>Peak Search Next Pea Next Pk Rig Next Pk Le Marker De Mkr-C Mkr-Ref L Mo</td>	Ref 20.00 dBm	406 GHz PNO: Fast IFGain:Low	Trig: Free	Run dB	Avg Type Avg Hold	:: Log-Pwr :>100/100 Mikr1	24.976 -38.4	5.00 GHz	Peak Search Next Pea Next Pk Rig Next Pk Le Marker De Mkr-C Mkr-Ref L Mo

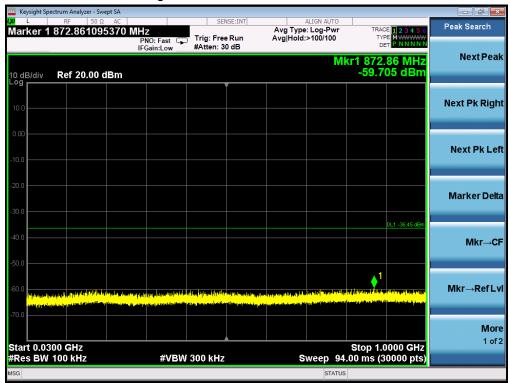


#### TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11g FOR MODULATION IN MIDDLE CHANNEL

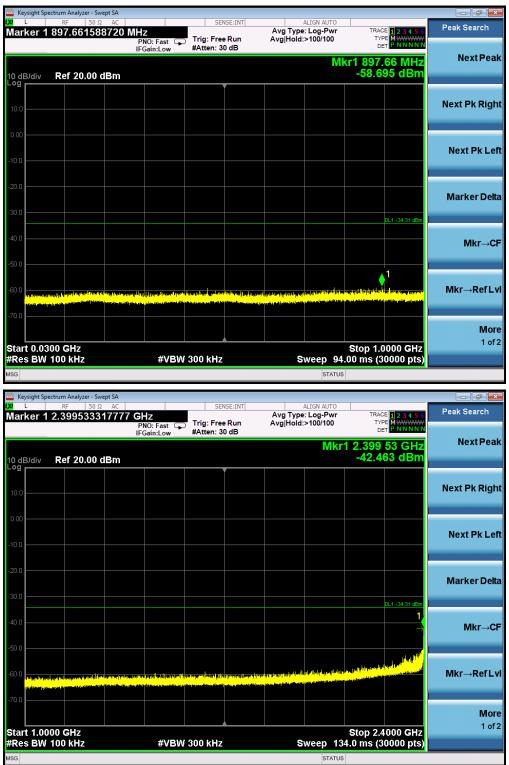


#### TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE

OF 802.11g FOR MODULATION IN HIGH CHANNEL



Keysight Spectrum Analyzer - Swept K L RF 50 Ω	AC AC	SENSE:INT	ALIGN AUTO		
larker 1 2.390899696	6657 GHz PNO: Fast	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 123456 TYPE MWWWW DET P N N N N N	Peak Search
0 dB/div Ref 20.00 dE	IFGain:Low	#Atten: 30 dB	Mkr	1 2.390 90 GHz -54.654 dBm	Next Pea
		T T			
10.0					Next Pk Rig
3.00					
10.0					Next Pk Le
20.0					Marker De
0.0					
0.0				DL1 -36.45 dBm	
0.0					Mkr→
50.0				<b>!</b>	
0.0			A set of the local state of the		Mkr→RefL
a the second	and the second	na statu li anta di Anna pia da para anta da di Santa	An an and the second she is a second state of the second	ally in the state of the level of the state	
70.0					Mo
					INIC
				Oton 2 4000 OU-	1 0
Start 1.0000 GHz Res BW 100 kHz	#VBV	V 300 kHz	Sweep 13	Stop 2.4000 GHz 4.0 ms (30000 pts)	1 o
	#VBV	V 300 kHz	Sweep 13	4.0 ms (30000 pts)	1 o
Res BW 100 kHz			STATUS	4.0 ms (30000 pts)	
Res BW 100 kHz G Keysight Spectrum Analyzer - Swept L RF 50 Ω	t SA AC 49502 GHz	SENSE:INT	STATUS ALIGN AUTO Avg Type: Log-Pwr	4.0 ms (30000 pts)	
Res BW 100 kHz G Keysight Spectrum Analyzer - Swept L RF 50 Ω	t SA AC	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	4.0 ms (30000 pts)	Peak Search
Res BW 100 kHz <sup>IG</sup> , Keysight Spectrum Analyzer - Swept L RF 50 Ω larker 1 24.98048504	AC 49502 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	4.0 ms (30000 pts)	Peak Search
Res BW 100 kHz 3G Keysight Spectrum Analyzer - Swept L RE 50 Ω farker 1 24.98048504 0 dEJ/div Ref 20.00 dE	AC 49502 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	4.0 ms (30000 pts)	Peak Search
Res BW 100 kHz g keysight Spectrum Analyzer - Swept b RF 50 Q larker 1 24.98048504 0 dB/div Ref 20.00 dE	AC 49502 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	4.0 ms (30000 pts)	Peak Search Next Pea
Res BW 100 kHz           3G	AC 49502 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	4.0 ms (30000 pts)	Peak Search Next Pea
Res BW 100 kHz a keysight Spectrum Analyzer - Swept keysight Spectrum Analyzer - Swept keysight Spectrum Analyzer - Swept so a larker 1 24.98048504 0 dB/div Ref 20.00 dE 0 dB/div Ref 20.00 dE	AC 49502 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	4.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig
Res BW 100 kHz           IG           IG           Keysight Spectrum Analyzer - Swept           L         RF           S0 Ω           larker 1 24.98048504           O dB/div           Ref 20.00 dE           0.00	AC 49502 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	4.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig
Res BW 100 kHz           3G              Keysight Spectrum Analyzer - Swept           L         RF           S0 Ω           larker 1 24.98048504           0 dB/div           Ref 20.00 dE           0.00           0.00	AC 49502 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	4.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig
Res BW 100 kHz           3G              Keysight Spectrum Analyzer - Swept           L         RF           S0 Ω           larker 1 24.98048504           0 dB/div           Ref 20.00 dE           0.00           0.00	AC 49502 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	4.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Le
Res BW 100 kHz           3G              Keysight Spectrum Analyzer - Swept           L         RF           S0 Q           larker 1 24.98048504           0 dB/div           Ref 20.00 dE           0 Q	AC 49502 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>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 L RE 50 Ω 1arker 1 24.98048504 0 dEJ/div Ref 20.00 dE 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	AC 49502 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN 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           Id           Id           Id           Revisiont Spectrum Analyzer - Swept           Id           RE           S0 Q           Id           Ref 20.00 dE           Id           Id           Id           Ref 20.00 dE           Id           Id <td>t SA AC J9502 GHZ IFGain:Low BM</td> <td>SENSE:INT</td> <td>Aug Type: Log-Pwr Avg Hold:&gt;100/100</td> <td>4.0 ms (30000 pts)</td> <td>Peak Search Next Pea Next Pk Rig Next Pk Lu</td>	t SA AC J9502 GHZ IFGain:Low BM	SENSE:INT	Aug Type: Log-Pwr Avg Hold:>100/100	4.0 ms (30000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Lu
Res BW 100 kHz           sg           sg           keysight Spectrum Analyzer - Swept           RF         50 x2           larker 1 24.98048504           0 dB/div         Ref 20.00 dE           0 dB/div         Ref 20.00 dE           0 0 dB/div         Ref 20.00 dE           0 0 dB/div         Ref 20.00 dE           0 0 0         0.00           0 0 0         0.00           0 0         0.00           0 0         0.00           0 0         0.00	t SA AC J9502 GHZ IFGain:Low BM	SENSE:INT Trig: Free Run #Atten: 30 dB	Aug Type: Log-Pwr Avg Hold:>100/100	4.0 ms (30000 pts)	Peak Search Next Pe Next Pk Rig Next Pk Lu Marker De
Res BW 100 kHz           3G	t SA AC J9502 GHZ IFGain:Low BM	SENSE:INT Trig: Free Run #Atten: 30 dB	Aug Type: Log-Pwr Avg Hold:>100/100	4.0 ms (30000 pts)	Peak Search Next Pe Next Pk Rig Next Pk L Marker De
Res BW 100 kHz           3G           Segist Spectrum Analyzer - Swept           Re 100 kHz           Segist Spectrum Analyzer - Swept           Ref 20.00 dE           0 dB/div           Ref 20.00 dE           0 dB/div           0 dB/div <t< td=""><td>t SA AC J9502 GHZ IFGain:Low BM</td><td>SENSE:INT Trig: Free Run #Atten: 30 dB</td><td>Aug Type: Log-Pwr Avg Hold:&gt;100/100</td><td>4.0 ms (30000 pts)</td><td>Peak Search Next Pe Next Pk Rig Next Pk Lu Marker De</td></t<>	t SA AC J9502 GHZ IFGain:Low BM	SENSE:INT Trig: Free Run #Atten: 30 dB	Aug Type: Log-Pwr Avg Hold:>100/100	4.0 ms (30000 pts)	Peak Search Next Pe Next Pk Rig Next Pk Lu Marker De
Res BW 100 kHz           3G	t SA AC J9502 GHZ IFGain:Low BM	SENSE:INT Trig: Free Run #Atten: 30 dB	Aug Type: Log-Pwr Avg Hold:>100/100	4.0 ms (30000 pts)	Peak Search Next Peac Next Pk Rig Next Pk Lu Marker De Mkr-A
Res BW 100 kHz           IG           IG           Keysight Spectrum Analyzer - Swept           IR           IR           IR           IR           IR           IR           IN           IR	t SA AC J9502 GHZ IFGain:Low BM	SENSE:INT Trig: Free Run #Atten: 30 dB	Aug Type: Log-Pwr Avg Hold:>100/100	4.0 ms (30000 pts)	Peak Search Next Peak Next Pk Rig Next Pk Lu Marker De Mkr→Ref L
Res BW 100 kHz           IG           IG           IG           IC	t SA AC PNO: Fast IFGain:Low BM	SENSE:INT Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 Mkr	4.0 ms (30000 pts)	1 o Peak Search Next Pea Next Pk Rig Next Pk Le Marker De Mkr→Ref L Mo 1 o

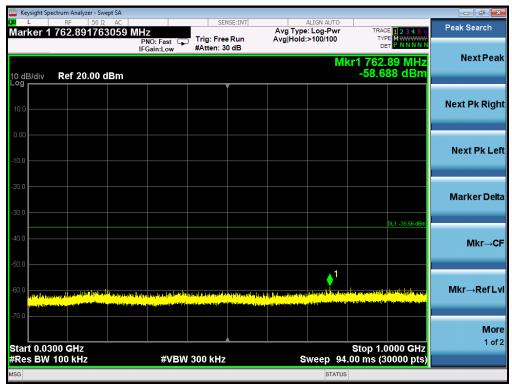


#### TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF 802.11n20 FOR MODULATION IN LOW CHANNEL

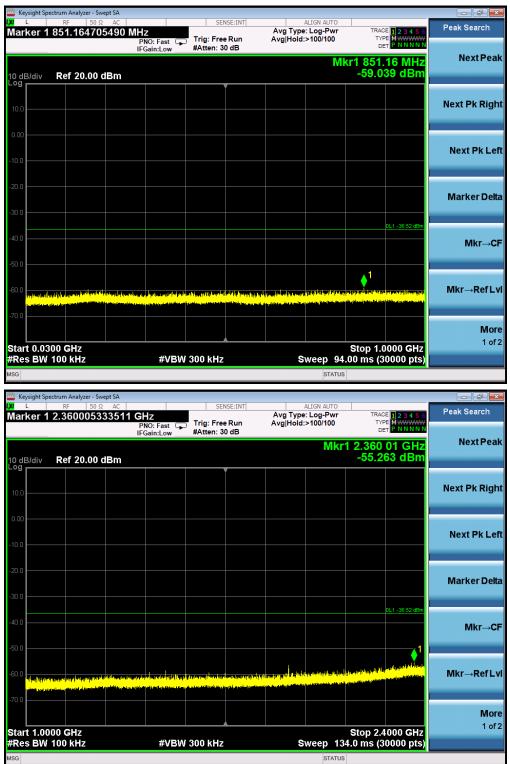


#### TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE

OF 802.11n20 FOR MODULATION IN MIDDLE CHANNEL



Keysight Spectrum Analyzer - Swept SA L RF 50 Ω AC		SENSE:INT		IGN AUTO		Deal	. O
arker 1 2.391646388213	3 GHz PNO: Fast Trig:	Free Run	Avg Type: L Avg Hold:>1		TRACE 12 TYPE MW	WWWW	Search
		en: 30 dB			DET P N		NextPea
dB/div Ref 20.00 dBm				MKr1 2	2.391 65 ( -53.656 c	GHZ	NOXET OF
10.0						Nex	t Pk Rig
10.0						Ne	ext Pk Le
0.0							
20.0							
20.0						Ma	rker De
80.0					DL1 -35	5.56 dBm	
10.0							Mkr→C
						1	
60.0							
50.0	an in the state of the second s	and the second	ing a second state of the second second	ugus de stalles (selle)			r→RefL
and design on a part of the second state of th	فكالمصابقاتهم ليأبوني يتمادني والإلوارك والعزيمان	Warden bleine Brech Bernichter	a star star home all set	or, the she is a bound of a state in			
70.0							Мо
							1 0
4						011-	
	#VBW 300 I	(Hz	Sw	Si eep 134.0	top 2.4000 ms (30000		
Start 1.0000 GHz Res BW 100 kHz <sup>sg</sup>	#VBW 300 H	(Hz	Sw				
Res BW 100 kHz	#VBW 300 I	(Hz	Sw	eep 134.0		0 pts)	
Res BW 100 kHz           sq           keysight Spectrum Analyzer - Swept SA           L         RF         50 \Omega Ac	0 GHz	SENSE:INT	ALI Avg Type: L	IGN AUTO	TRACE 1 2	0 pts) 3 4 5 6 Peak	- P
Res BW 100 kHz sg keysight Spectrum Analyzer - Swept SA L RF 50 Q AC	0 GHz PNO: Fast D Trig:		ALI	IGN AUTO		0 pts) 3 4 5 6 NNNN	Search
Res BW 100 kHz sg keysight Spectrum Analyzer - Swept SA L RF 50 Ω AC larker 1 2,492506900230	0 GHz PNO: Fast 😱 Trig:	SENSE:INT	ALI Avg Type: L	134.0 status IGN AUTO Log-Pwr 100/100 Mkr1	TRACE 1 2 TYPE MW DET P N 2.492 5	0 pts) 3 4 5 6 NNNN CHZ	Search
Res BW 100 kHz           sg           . Keysight Spectrum Analyzer - Swept SA           L         RF           Jarker 1 2.49250690023(           0 dB/div         Ref 20.00 dBm	0 GHz PNO: Fast 😱 Trig:	SENSE:INT	ALI Avg Type: L	134.0 status IGN AUTO Log-Pwr 100/100 Mkr1	TRACE 1 2 TYPE M DET P N	0 pts) 3 4 5 6 NNNN CHZ	Search
Res BW 100 kHz           sg           keysight Spectrum Analyzer - Swept SA           L         RF           Jarker 1 2.49250690023(           0 dB/div         Ref 20.00 dBm	0 GHz PNO: Fast 😱 Trig:	SENSE:INT	ALI Avg Type: L	134.0 status IGN AUTO Log-Pwr 100/100 Mkr1	TRACE 1 2 TYPE MW DET P N 2.492 5	3 4 5 6 NNNN GHZ JBm	search NextPea
Res BW 100 kHz           sg           keysight Spectrum Analyzer - Swept SA           L         RF           Jarker 1 2.49250690023(           0 dB/div         Ref 20.00 dBm	0 GHz PNO: Fast 😱 Trig:	SENSE:INT	ALI Avg Type: L	134.0 status IGN AUTO Log-Pwr 100/100 Mkr1	TRACE 1 2 TYPE MW DET P N 2.492 5	3 4 5 6 NNNN GHZ JBm	search NextPea
Res BW 100 kHz           sg           sg           keysight Spectrum Analyzer - Swept SA           L         RF           Jarker 1 2.49250690023(           0           0           0           0           0           0           0           0           0           0	0 GHz PNO: Fast 😱 Trig:	SENSE:INT	ALI Avg Type: L	134.0 status IGN AUTO Log-Pwr 100/100 Mkr1	TRACE 1 2 TYPE MW DET P N 2.492 5	3 4 5 6 NNNN GHZ JBm	search NextPea
Res BW 100 kHz           sg           sg           keysight Spectrum Analyzer - Swept SA           L         RF           Jarker 1 2.49250690023(           0           0           0           0           0           0           0           0           0           0	0 GHz PNO: Fast 😱 Trig:	SENSE:INT	ALI Avg Type: L	134.0 status IGN AUTO Log-Pwr 100/100 Mkr1	TRACE 1 2 TYPE MW DET P N 2.492 5	3 4 5 6 NNNN GHZ JBm Nex	(Search Next Pea t Pk Rig
Res BW 100 kHz           3G           Keysight Spectrum Analyzer - Swept SA           L         RF           SO Ω         AC           Iarker 1 2.49250690023(           0         0B/div           Ref 20.00 dBm           0           0	0 GHz PNO: Fast 😱 Trig:	SENSE:INT	ALI Avg Type: L	134.0 status IGN AUTO Log-Pwr 100/100 Mkr1	TRACE 1 2 TYPE MW DET P N 2.492 5	3 4 5 6 NNNN GHZ JBm Nex	search Next Pea t Pk Rig
Res BW 100 kHz sa Keysight Spectrum Analyzer - Swept SA L RF 50 Ω AC larker 1 2.492506900230	0 GHz PNO: Fast 😱 Trig:	SENSE:INT	ALI Avg Type: L	134.0 status IGN AUTO Log-Pwr 100/100 Mkr1	TRACE 1 2 TYPE MW DET P N 2.492 5	3 4 5 6 NNNN GHZ JBm Nex	(Search Next Pea t Pk Rig
Res BW 100 kHz           3G           Keysight Spectrum Analyzer - Swept SA           L         RF           SO Ω         AC           Iarker 1 2.492506900230           0         dB/div           Ref 20.00 dBm           9           10.0	0 GHz PNO: Fast 😱 Trig:	SENSE:INT	ALI Avg Type: L	134.0 status IGN AUTO Log-Pwr 100/100 Mkr1	TRACE 1 2 TYPE MW DET P N 2.492 5	GHZ BM NNNN SHZ NNNN Nex	t Pk Rig
Res BW 100 kHz           3G           Keysight Spectrum Analyzer - Swept SA           L         RF           50 Ω         AC           larker 1 2.492506900230           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 GHz PNO: Fast 😱 Trig:	SENSE:INT	ALI Avg Type: L	134.0 status IGN AUTO Log-Pwr 100/100 Mkr1	TRACE 12 TYPE MW DET N 2.492 5 -38.136 c	3456 Peak Peak SHZ IBm Nex Nex	( Search Next Pea t Pk Rig
Res BW 100 kHz           3G           Sectors           Keysight Spectrum Analyzer - Swept SA           L         RF           100 kHz           0 dB/div         Ref 20.00 dBm           9	0 GHz PNO: Fast 😱 Trig:	SENSE:INT	Avg Type: L Avg Hold:>1	reep 134.0	TRACE 12 TYPE MW DET PN 2.492 5 0 -38.136 c	GHZ BM NNNN SHZ NNNN Nex	k Search Next Per t Pk Rig ext Pk Lu
Res BW 100 kHz           3G           Segistive Spectrum Analyzer - Swept SA           L         RF           SO Ω         AC           Iarker 1 2.49250690023(           0         B/div           Ref 20.00 dBm           0         Iarker 1 2.49250690023(           0         Iarker 1 2.49250690023(           0         Iarker 1 2.49250690023(           0         Iarker 1 2.49250690023(	0 GHz PNO: Fast 😱 Trig:	SENSE:INT	Avg Type: L Avg Hold:>1	reep 134.0	TRACE 12 TYPE MW DET PN 2.492 5 0 -38.136 c	3456 Peak Peak SHZ IBm Nex Nex	k Search Next Per t Pk Rig ext Pk Lu
Res BW 100 kHz           3G           Seysight Spectrum Analyzer - Swept SA           L         RE           10 Q         SO Q           0 dB/div         Ref 20.00 dBm           9         SO Q           10 Q         SO Q           11 Q         SO Q           12 Q         SO Q           14 Q         SO Q           14 Q         SO Q	0 GHz PNO: Fast 😱 Trig:	SENSE:INT	Avg Type: L Avg Hold:>1	134.0 status IGN AUTO Log-Pwr 100/100 Mkr1	TRACE 12 TYPE MW DET PN 2.492 5 0 -38.136 c	3456 Peak Peak SHZ IBm Nex Nex	k Search Next Per t Pk Rig ext Pk Lu
Res BW 100 kHz           3G           Keysight Spectrum Analyzer - Swept SA           L         RE           10 Q         SO Q           0 dB/div         Ref 20.00 dBm	0 GHz PNO: Fast 😱 Trig:	SENSE:INT	Avg Type: L Avg Hold:>1	reep 134.0	TRACE 12 TYPE MW DET PN 2.492 5 0 -38.136 c	S 556 dBm	x Search Next Per t Pk Rig ext Pk Lo wrker De Mkr→0
Res BW 100 kHz           sa           Sa           keysight Spectrum Analyzer - Swept SA           L         RF           S0 Ω         AC           Iarker 1 2.49250690023(           0         B/div           Ref 20.00 dBm           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           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	0 GHz PNO: Fast 😱 Trig:	SENSE:INT	Avg Type: L Avg Hold:>1	reep 134.0	TRACE 12 TYPE MW DET PN 2.492 5 0 -38.136 c	S 556 dBm	x Search Next Per t Pk Rig ext Pk Lo wrker De Mkr→0
Res BW 100 kHz         sq	0 GHz PNO: Fast 😱 Trig:	SENSE:INT	Avg Type: L Avg Hold:>1	reep 134.0	TRACE 12 TYPE MW DET PN 2.492 5 0 -38.136 c	S 556 dBm	x Search Next Pea t Pk Rig ext Pk Le wrker Del Mkr→C
Res BW 100 kHz         Sectrum Analyzer - Swept SA         L       RE       50 Q       AC         Tarker 1 2.492506900230         0 dB/div       Ref 20.00 dBm         0	0 GHz PNO: Fast 😱 Trig:	SENSE:INT	Avg Type: L Avg Hold:>1	reep 134.0	TRACE 12 TYPE MW DET PN 2.492 5 0 -38.136 c	S 556 dBm	x Search Next Pea t Pk Rig ext Pk Le urker Del Mkr→C r→Ref L Mo
Res BW 100 kHz           3G           Segistive Spectrum Analyzer - Swept SA           L         RF           SO Q         Q           O dB/div         Ref 20.00 dBm           9         Q           10.0           10	0 GHz PNO: Fast 😱 Trig:	SENSE:INT	Aug Type: L Avg Type: L Avg Hold:>1	reep 134.0	TRACE 1 2 TYPE M PET P 2.492 5 0 -38.136 c	GHz GHz	(Search Next Pea t Pk Rig



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

🔤 Keysight Spec	ctrum Analyzer - Swep									
Marker 1	RF 50 Ω 2.51652530	0843 G	Hz NO: Fast		Run		ALIGN AUTO : Log-Pwr :>100/100	TY	DE 1 2 3 4 5 6 PE MWWWW	Peak Search
10 dB/div	Ref 10.00 di	IF	Gain:Low	#Atten: 2				(r1 2.51	6 5 GHz 71 dBm	Next Peak
0.00										Next Pk Right
-10.0										Next Pk Lef
-30.0									DL1 -36.52 dBm	Marker Delta
-50.0	ىرى يەرە <sup>ل ي</sup> ەرىس <sub>ىرى</sub>			a all a state of the	de alte alte alte de la				aby definition of the last	Mkr→CF
-60.0				in and all of the second						Mkr→RefLv
-80.0 Start 2.48								Stop 2	5.00 GHz	More 1 of 2
#Res BW '	1.0 MHz		#VBW	3.0 MHz		s	weep 58	.00 ms (3	0000 pts)	

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

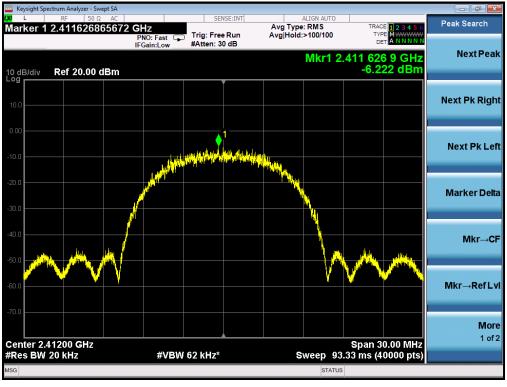
Channel No.	PSD (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-6.222	8	Pass
Middle Channel	-7.506	8	Pass
High Channel	-8.113	8	Pass

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

Channel No.	PSD (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-9.489	8	Pass
Middle Channel	-10.264	8	Pass
High Channel	-11.698	8	Pass

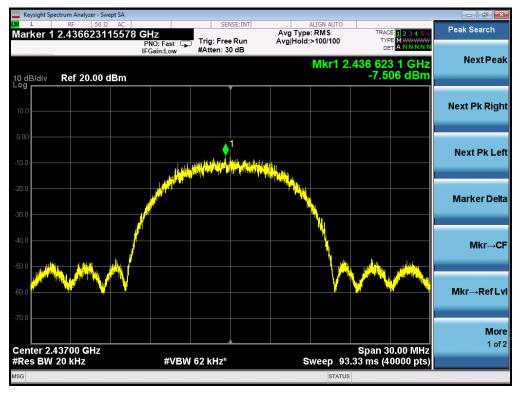
TEST ITEM	POWER PECTRAL DENSITY
TEST MODE	802.11n 20 with data rate 6.5

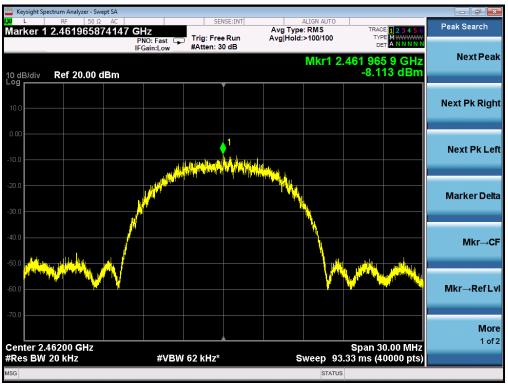
Channel No.	PSD (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-9.283	8	Pass
Middle Channel	-10.297	8	Pass
High Channel	-11.888	8	Pass



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

TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

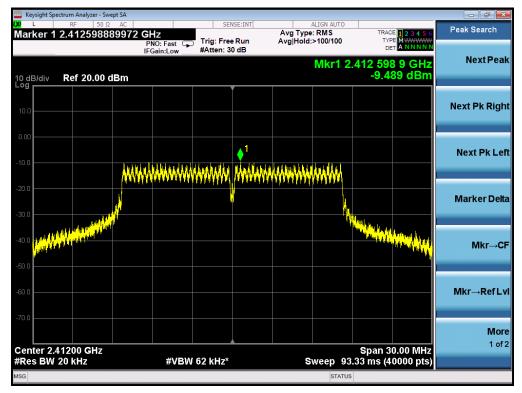




TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

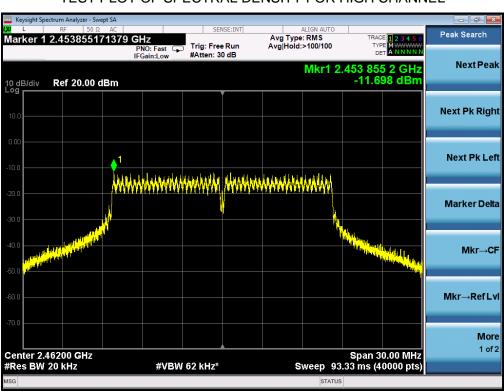
# 802.11g TEST RESULT

TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

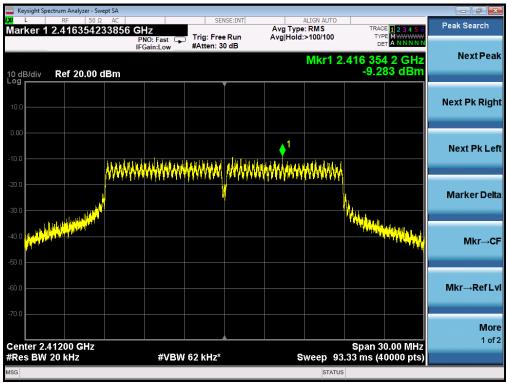




### TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

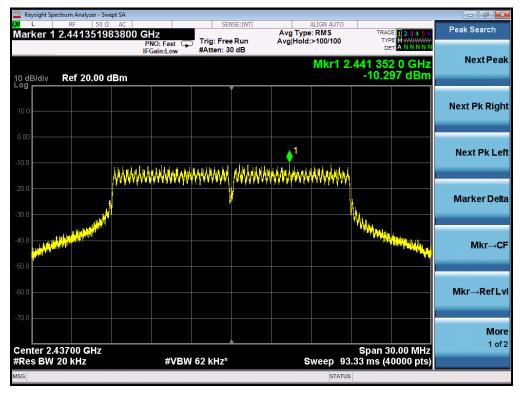


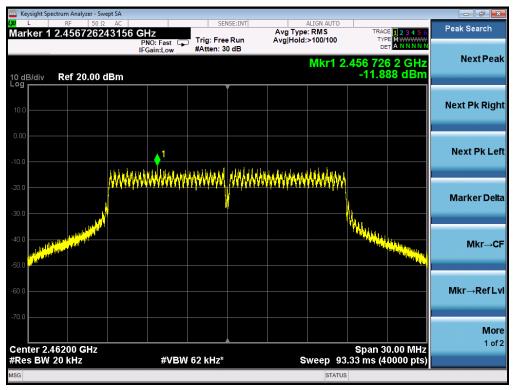
TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL



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

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





### TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

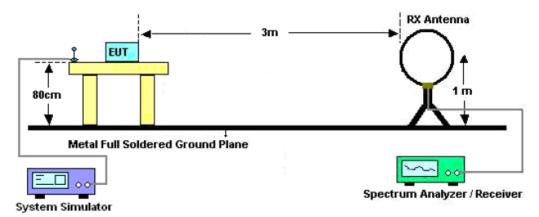
# **11. RADIATED EMISSION**

## **11.1. MEASUREMENT PROCEDURE**

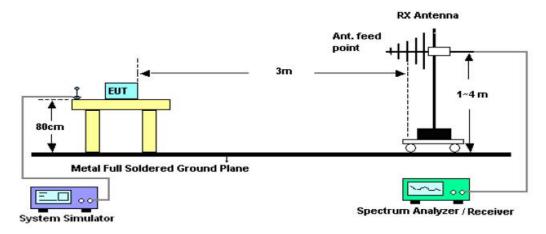
- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated 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

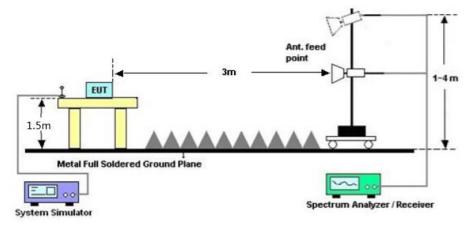
Radiated Emission Test-Setup Frequency Below 30MHz



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



### RADIATED EMISSION TEST SETUP ABOVE 1000MHz



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

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

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

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

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

### 11.4. TEST RESULT

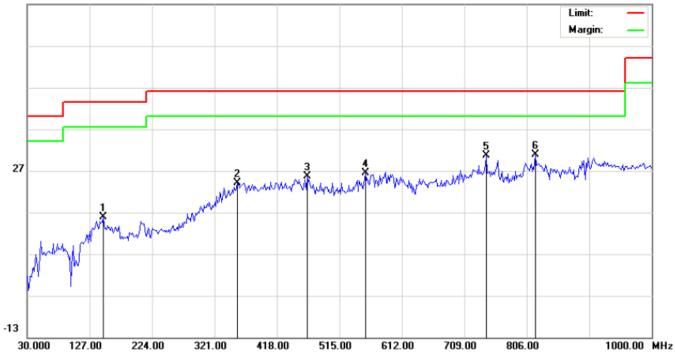
#### **RADIATED EMISSION BELOW 30MHZ**

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

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

EUT	MASTER TARGET	Model Name	PI0IOMT000100
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Horizontal

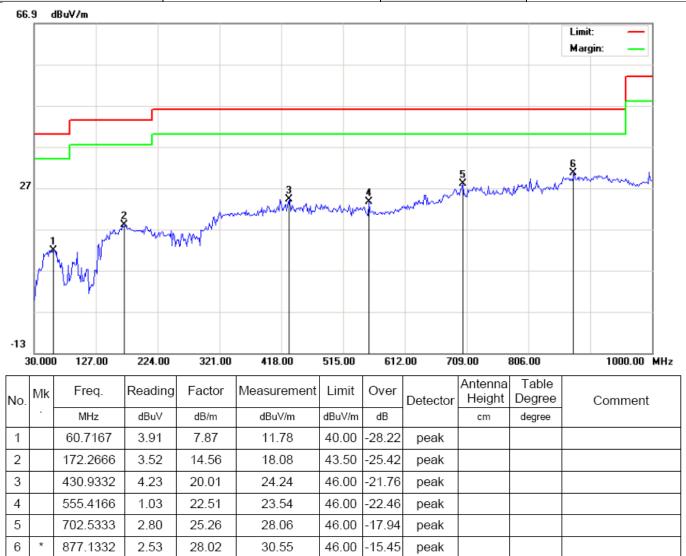
66.9 dBuV/m



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height		Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		148.0166	2.52	13.25	15.77	43.50	-27.73	peak			
2		356.5667	5.30	18.78	24.08	46.00	-21.92	peak			
3		464.8833	4.86	20.75	25.61	46.00	-20.39	peak			
4		555.4166	3.81	22.62	26.43	46.00	-19.57	peak			
5		742.9500	4.25	26.43	30.68	46.00	-15.32	peak			
6	*	818.9333	3.45	27.32	30.77	46.00	-15.23	peak			

**RESULT: PASS** 

EUT	MASTER TARGET	Model Name	PI0IOMT000100
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Vertical



# **RESULT: PASS**

#### Note:

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

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

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

## **RADIATED EMISSION ABOVE 1GHZ**

EUT	MASTER TARGET	Model Name	PI0IOMT000100
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value rype	
4824.022	49.52	3.72	53.24	74	-20.76	peak	
4824.063	43.54	3.72	47.26	54	-6.74	AVG	
7236.031	41.38	8.15	49.53	74	-24.47	peak	
7236.040	35.42	8.15	43.57	54	-10.43	AVG	
Remark:							
Factor = Ante	enna Factor + Ca	able Loss – P	re-amplifier.				

EUT	MASTER TARGET	Model Name	PI0IOMT000100
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4824.094	48.78	3.72	52.5	74	-21.5	peak
4824.039	42.85	3.72	46.57	54	-7.43	AVG
7236.066	41.42	8.15	49.57	74	-24.43	peak
7236.119	35.61	8.15	43.76	54	-10.24	AVG
Remark:						
	enna Factor + Ca	able Loss – F	Pre-amplifier.			

### Report No.: AGC10288170701FE04 Page 49 of 70

EUT	MASTER TARGET	Model Name	PI0IOMT000100
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHZ	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value i ype		
4874.041	49.38	3.75	53.13	74	-20.87	peak		
4874.038	43.42	3.75	47.17	54	-6.83	AVG		
7311.078	41.25	8.16	49.41	74	-24.59	peak		
7311.075	35.31	8.16	43.47	54	-10.53	AVG		
Remark:								
Factor = Ante	enna Factor + Ca	able Loss – F	Pre-amplifier.					

EUT	MASTER TARGET	Model Name	PI0IOMT000100
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHZ	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4874.094	49.22	3.75	52.97	74	-21.03	peak
4874.046	43.38	3.75	47.13	54	-6.87	AVG
7311.084	41.15	8.16	49.31	74	-24.69	peak
7311.087	35.26	8.16	43.42	54	-10.58	AVG
Remark:						
	enna Factor + Ca	able Loss – I	Pre-amplifier.			

#### Report No.: AGC10288170701FE04 Page 50 of 70

EUT	MASTER TARGET	Model Name	PI0IOMT000100
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHZ	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
4924.049	49.05	3.81	52.86	74	-21.14	peak	
4924.079	43.14	3.81	46.95	54	-7.05	AVG	
7386.039	41.42	8.19	49.61	74	-24.39	peak	
7386.077	35.58	8.19	43.77	54	-10.23	AVG	
Remark:	· ·				•	÷	
Factor = Anter	nna Factor + Cable	e Loss – Pre-	amplifier.				

EUT	MASTER TARGET	Model Name	PI0IOMT000100
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHZ	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4924.039	47.41	3.81	51.22	74	-22.78	peak
4924.072	41.55	3.81	45.36	54	-8.64	AVG
7386.080	41.07	8.19	49.26	74	-24.74	peak
7386.066	35.25	8.19	43.44	54	-10.56	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 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	MASTER TARGET	Model Name	PI0IOMT000100
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHZ	Antenna	Horizontal





larker 1 2.411566	D AC 566567 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: RMS Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N	Peak Search
0 dB/div Ref 106.0	00 dBµV		Mkr	1 2.411 57 GHz 95.213 dBµV	NextPea
eg 96.0					Next Pk Rig
76.0 66.0 56.0		2	-		Next Pk Le
26.0					Marker De
tart 2.37000 GHz Res BW 1.0 MHz	x			Stop 2.42500 GHz .066 ms (1000 pts)	Mkr→C
1         N         1         f           2         N         1         f           3	2.411 57 GHz 2.390 00 GHz	95.232 dBµV 39.441 dBµV			Mkr→RefL
7					<b>М</b> о 1 о

EUT	MASTER TARGET	Model Name	PI0IOMT000100
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHZ	Antenna	Vertical
	РК		





IFGain:Low	#Atten: 20 dB		DET A NNNN	
0 dBµV		Mkr	2.412 56 GHz 93.158 dBµV	NextPea
				Next Pk Rigl
				Next Pk Le
				Marker Del
#VB		Sweep 1.	Stop 2.42500 GHz 066 ms (1000 pts)	Mkr→C
2.412 56 GHz 2.390 00 GHz	93.167 dBµV 38.988 dBµV		E	Mkr→RefL
				<b>Мо</b> 1 о
	× 2.412 55 GHz	#VBW 3.0 MHz*	0 dBµV 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 dBμV 93.153 dBμV 93.153 dBμV 93.153 dBμV 93.153 dBμV 93.153 dBμV 100 dBμV 93.153 dBμV 100 dBμV 93.153 dBμV 100 dB

EUT	MASTER TARGET	Model Name	PI0IOMT000100
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHZ	Antenna	Horizontal



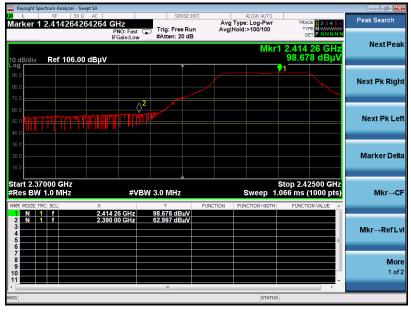
larker 1	RF 50 2.4624124	Ω AC 412412 GHz PNO: Fast IEGain:Low		Avg	ALIGN AUTO Type: RMS Hold:>100/100	TRACE 1 2 3 4 5 TYPE A WWWW DET A NNNN	¥
0 dB/div	Ref 106.0		WAREEN. 20 GB		Mkr	2.462 41 GHz 92.620 dBµV	Next Pea
.og 96.0 86.0							Next Pk Rig
56.0 56.0 46.0							Next Pk Lo
36.0 26.0 16.0							Marker De
itart 2.45 Res BW	1.0 MHz	#V	BW 3.0 MHz*	FUNCTION		Stop 2.50000 GHz 066 ms (1000 pts)	
1 N 1 2 N 1 3 4 5 5	f	2.462 41 GHz 2.483 50 GHz	92.632 dBµV 39.480 dBµV				Mkr→RefL
6 7 8							Ma 1 o

EUT	MASTER TARGET	Model Name	PI0IOMT000100
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHZ	Antenna	Vertical



/larker 1 2.4	RF 50 Ω 16171171		ast ⊂, Low	Trig: Free Ru #Atten: 20 d	un A	vg Type	ALIGN AUTO e: RMS :>100/100	TRAC TYP DE	E 1 2 3 4 5 6 E A WWWW T A N N N N N	
0 dB/div R	ef 106.00	dBµV					Mkr		71 GHz 1 dBµV	Next Pe
.og 96.0 86.0		<b>↓</b> 1								Next Pk Rig
76.0 36.0 56.0						<sup>2</sup>				Next Pk L
36.0 26.0 16.0										Marker De
Res BW 1.0	MHz	х		V 3.0 MHz*	FUNCTION		Sweep 1.	066 ms (	0000 GHz 1000 pts)	Mkr⊸(
1 N 1 1 2 N 1 1 3 4 5		2.461 71 G 2.483 50 G	Hz Hz	90.580 dBµV 38.398 dBµV						Mkr→RefL
6 7 8 9 0										<b>Мс</b> 1 с
11				ш					+	

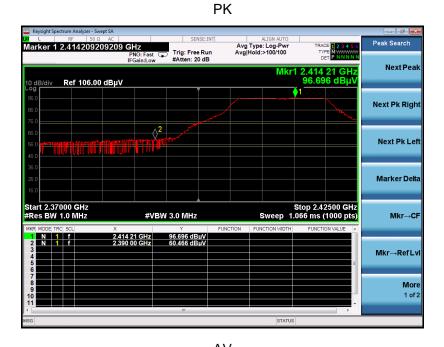
EUT	MASTER TARGET	Model Name	PI0IOMT000100
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2412MHZ	Antenna	Horizontal





) dBµV				
		M	κr1 2.410 63 GHz 90.293 dBμV	NextPea
		<b>1</b>		Next Pk Rig
	2			Next Pk Le
				Marker De
X	Y	· · · · · ·		Mkr→0
2.410 63 GHz 2.390 00 GHz	90.307 dBµV 40.583 dBµV			Mkr→RefL
				<b>Мо</b> 1 о
	#VE 2.410 63 GHz	2.410 63 GHz 90.307 dBµV	#VBW 3.0 MHz* Sweep 2.410 63 GHz 9307 dBjvV	Stop 2.42500 GHz           #VBW 3.0 MHz*         Sweep 1.066 ms (1000 pts)           X         Y           2.410 63 GHz         90307 dBuV

EUT	MASTER TARGET	Model Name	PI0IOMT000100
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2412MHZ	Antenna	Vertical





EUT	MASTER TARGET	Model Name	PI0IOMT000100
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2462MHZ	Antenna	Horizontal



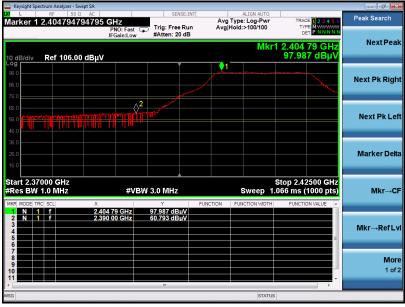
L	RF	lyzer - Swept S 50 Ω A 757757		t 😱 Trig: Fr		Avg Type Avg Hold	ALIGN AUTO e: RMS I:>100/100	TYP	123456 A ********* A N N N N N	Peak Search
0 dB/div	Ref 1	06.00 dE	βµV				Mkr	1 2.457 88.39	76 GHz 5 dBμV	NextPea
. <b>og</b> 96.0 86.0		<b>◆</b> <sup>1</sup>								Next Pk Righ
76.0 56.0 56.0					Workshow Vikai					Next Pk Le
16.0 36.0 26.0						2 2				Marker Del
tart 2.4 Res BW	1.0 MI			VBW 3.0 MH			Sweep 1.		000 pts)	Mkr→C
2 N 3 4 5 5	RC SCL 1 f 1 f		× 2.457 76 GHz 2.483 50 GHz		BµV	CTION FUI	NCTION WIDTH	FUNCTIO	N VALUE	Mkr→RefL
6 7 8 9 0										<b>Mo</b> 1 of
									Þ	

EUT	MASTER TARGET	Model Name	PI0IOMT000100
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2462MHZ	Antenna	Vertical



arker 1 2.46	50 Ω AC 6566566567	GHz PNO: Fast IFGain:Low	Trig: Free Run #Atten: 20 dB		ALIGN AUTO Type: RMS Iold:>100/100	TRACE 1 2 3 4 5 6 TYPE A WWWW DET A NNNN	
0 dB/div Rei	<sup>-</sup> 106.00 dBµV				Mkr	1 2.466 57 GHz 86.334 dBµV	Next Pea
-og 96.0 86.0		↓ <sup>1</sup>					Next Pk Righ
76.0 66.0 56.0 46.0					 ⊘ <sup>2</sup>		Next Pk Le
36.0 26.0 16.0							Marker Del
tart 2.45000 Res BW 1.0 M		#VB	N 3.0 MHz*	FUNCTION	Sweep 1	Stop 2.50000 GHz .066 ms (1000 pts)	Mkr→C
1 N 1 f 2 N 1 f 3 4 5	2.40	66 57 GHz 83 50 GHz	86.334 dBµV 38.794 dBµV			E	Mkr→RefL
6 7 8 9 10							Mo 1 of
1							

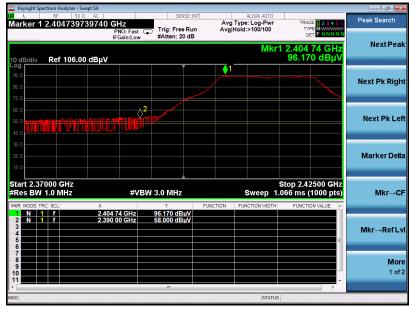
EUT	MASTER TARGET	Model Name	PI0IOMT000100
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 20 with data rate 6.5 2412MHZ	Antenna	Horizontal





larker 1		50 Ω AC 4254254 GHz PNO: Fas IEGain:Lo:		ALIGN AUTO Avg Type: RMS Avg Hold:>100/100	TRACE 123456 TYPE A WWWWW DET A NNNNN	Peak Search
0 dB/div	Ref 106	.00 dBµV	w #Atten: 20 db	Mkı	r1 2.409 25 GHz 88.521 dBµV	Next Pea
-og 96.0 86.0				▲ <sup>1</sup>		Next Pk Rig
76.0 66.0 56.0						Next Pk Le
46.0 36.0 26.0						Marker Del
tart 2.37 Res BW			/BW 3.0 MHz*		Stop 2.42500 GHz 1.066 ms (1000 pts)	Mkr→C
NKR MODE TR 1 N 1 2 N 1 3	f	× 2.409 25 GHz 2.390 00 GHz	Υ 88.530 dBµV 40.498 dBµV	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	Mkr→RefL
4 5						
4						<b>Mo</b> 1 of

EUT	MASTER TARGET	Model Name	PI0IOMT000100
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





l	50 Ω AC 208208208 GHz		Avg Type: RMS	TRACE 1 2 3 4 5 6	Peak Search
	PNC	D: Fast Trig: Free Run ain:Low #Atten: 20 dB	Avginola.s roomoo	DET A NNNNN	
0 dB/div Ref 1	06.00 dBµV		Mkr	1 2.408 21 GHz 86.789 dBµV	Next Pea
.og 96.0					
86.0			↓		Next Pk Rig
76.0					
66.0					
			1947 -	- and the second	Next Pk Le
56.0					
46.0	and the second	2 2			
36.0					Marker De
26.0					Marker De
16.0					
start 2.37000 GH				Stop 2.42500 GHz	
Res BW 1.0 MH	z	#VBW 3.0 MHz*	Sweep 1.	066 ms (1000 pts)	Mkr→C
IKR MODE TRC SCL	× 2.408 21	Y GHz 86.838 dBuV	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	
1 N 1 f 2 N 1 f	2.390 00				
1 N 1 f	2.390 00				Mkr→RefL
1         N         1         f           2         N         1         f           3         -         -         -           4         -         -         -           5         -         -         -	2.390 00			E	Mkr→RefL
1         N         1         f           2         N         1         f           3         -         -         -           4         -         -         -           5         -         -         -           6         -         -         -           7         -         -         -	2.390 00			Ξ	
1         N         1         f           2         N         1         f           3         -         -         -           4         -         -         -           5         -         -         -           6         -         -         -           7         -         -         -           8         -         9         -	2.390 00			а 1	Мо
N         1         f           2         N         1         f           3         -         -         -           4         -         -         -           5         -         -         -           6         -         -         -           7         -         -         -           9         -         -         -	2.390 00				Мо
1         N         1         f           2         N         1         f           3         -         -         -           4         -         -         -           5         -         -         -           6         -         -         -           7         -         -         -           8         -         9         -	2.390 00	π			Mkr→RefL Mo 1 of

EUT	MASTER TARGET	Model Name	PI0IOMT000100
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

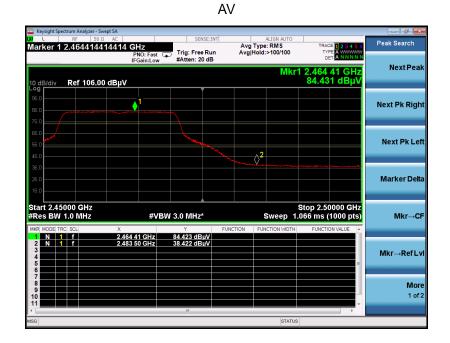


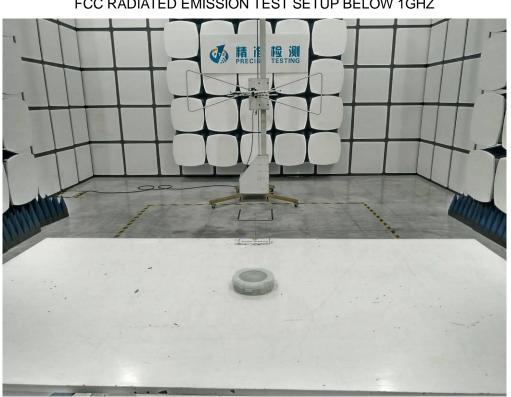


	RF 50 Ω AC		SENSE:INT	ALIGN AUTO Avg Type: RMS	TRACE 1 2 3 4 5 6	Peak Search
larker 1 2.4	159759759760	PNO: Fast C IFGain:Low	Trig: Free Run #Atten: 20 dB	Avg Hold:>100/100	TYPE A WWWW DET A N N N N N	
0 dB/div R	ef 106.00 dBµ\	,		Mkr	1 2.459 76 GHz 86.108 dBµV	Next Pea
96.0	1					
86.0	<u> </u>					Next Pk Rig
76.0						
56.0 <b></b>						
56.0			1 miles and a second			Next Pk Le
16.0 36.0				2 2		
26.0						Marker Del
16.0						
tart 2 45000					Stop 2 50000 CHz	
tart 2.45000 Res BW 1.0		#VB1	N 3.0 MHz*	Sweep 1	Stop 2.50000 GHz .066 ms (1000 pts)	Mkr→C
Res BW 1.0	MHz CL X		Y	Sweep 1	Stop 2.50000 GHz .066 ms (1000 pts) FUNCTION VALUE	Mkr→C
Res BW 1.0           IKR MODE TRC SC           1         N         1         f           2         N         1         f	MHZ	#VB) 159 76 GHz 183 50 GHz		· · · · ·	.066 ms (1000 pts)	
Res BW 1.0           KR MODE TRC SO           1         N           2         N           3           4	MHZ	159 76 GHz	ү 86.113 dBµV	· · · · ·	.066 ms (1000 pts)	
Res         BW         1.0           KR         MODE         TRC         SG           1         N         1         f           2         N         1         f           3         -         -         -           4         -         -         -           5         -         -         -           6         -         -         -	MHZ	159 76 GHz	ү 86.113 dBµV	· · · · ·	.066 ms (1000 pts)	
Res BW 1.0           KR MODE TRC SC           1         N           2         N           3           4           5           6           7           8	MHZ	159 76 GHz	ү 86.113 dBµV	· · · · ·	.066 ms (1000 pts)	Mkr→RefL
Res BW 1.0           KR MODE TRC SO           1         N           2         N         1           3         -           4         -           5         -           6         -           7         -	MHZ	159 76 GHz	ү 86.113 dBµV	· · · · ·	.066 ms (1000 pts)	Mkr→C Mkr→RefL Mo 1 ot

EUT	MASTER TARGET	Model Name	PI0IOMT000100
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



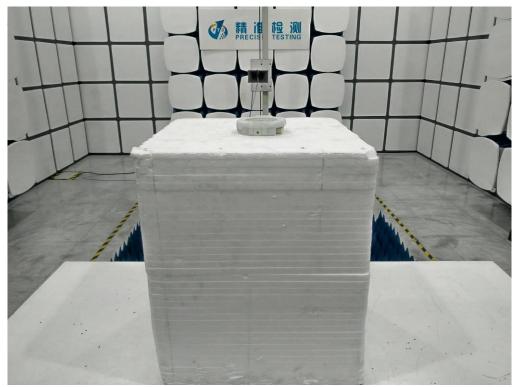




**APPENDIX A: PHOTOGRAPHS OF TEST SETUP** 

FCC RADIATED EMISSION TEST SETUP BELOW 1GHZ

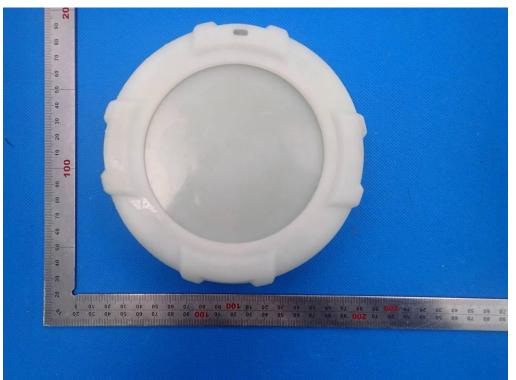
FCC RADIATED EMISSION TEST SETUP ABOVE 1GHZ





# APPENDIX B: PHOTOGRAPHS OF EUT ALL VIEW OF EUT

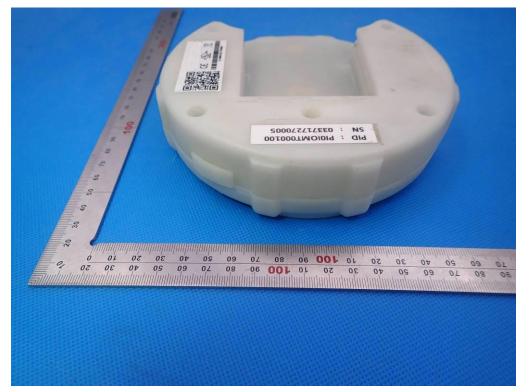
TOP VIEW OF EUT

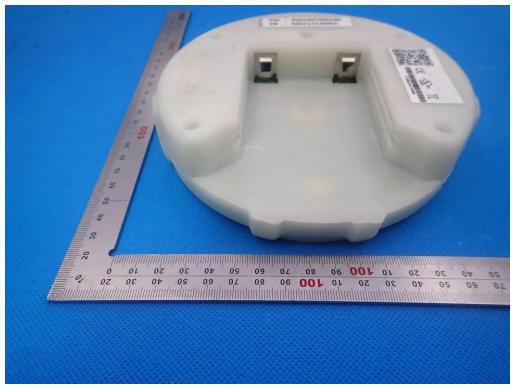




BOTTOM VIEW OF EUT

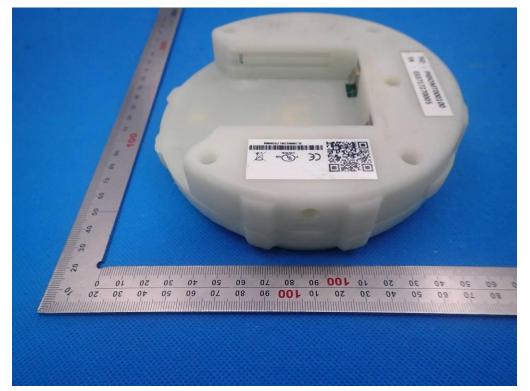
FRONT VIEW OF EUT

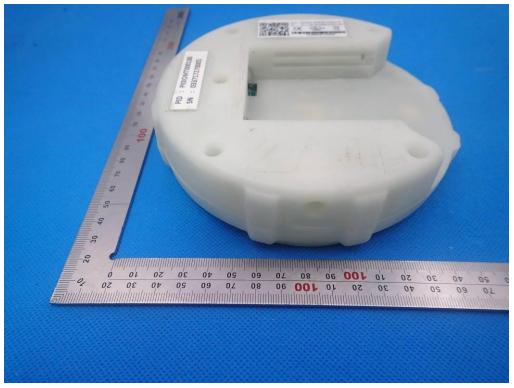




BACK VIEW OF EUT

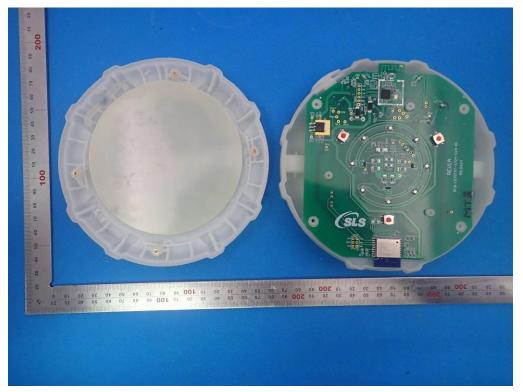
LEFT VIEW OF EUT





**RIGHT VIEW OF EUT** 

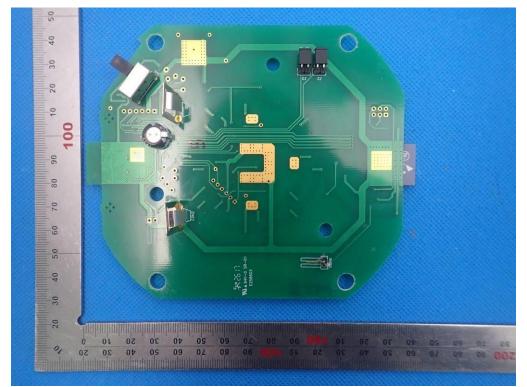
OPEN VIEW OF EUT

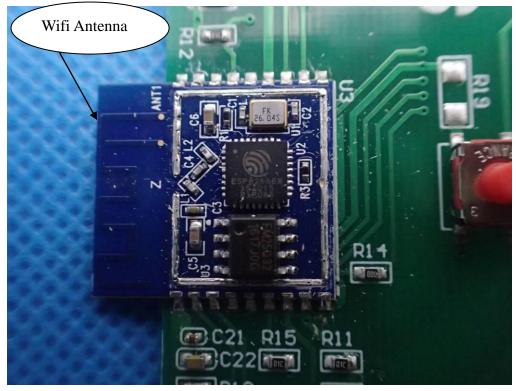




#### **INTERNAL VIEW OF EUT-1**

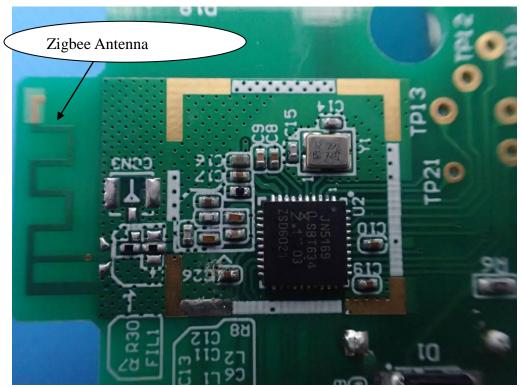
**INTERNAL VIEW OF EUT-2** 





**INTERNAL VIEW OF EUT-3** 

**INTERNAL VIEW OF EUT-4** 



----END OF REPORT----