

FCC Test Report

Report No.: AGC00008190404FE05

FCC ID : TW5GD8005

APPLICATION PURPOSE: Original Equipment

PRODUCT DESIGNATION: Four-Channel Wireless Digital Surverillance System

BRAND NAME : N/A

MODEL NAME : GD8005

CLIENT: Shenzhen Gospell Smarthome Electronic Co., Ltd.

DATE OF ISSUE : May 09, 2019

STANDARD(S)

TEST PROCEDURE(S) : FCC Part 15.247

REPORT VERSION: V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

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Attestation of Global Compliance

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REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0		May 09, 2019	Valid	Initial Release

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1. VERIFICATION OF CONFORMITY

Applicant	Shenzhen Gospell Smarthome Electronic Co., Ltd.			
Address	East of 01st-04st Floor, Block A, No.1 Industrial park, Fenghuanggang, South of No.1 Baotian Road, Xixiang street, Bao'an District, Shenzhen City, Guangdong Province 518126, P.R.China			
manufacturer	Shenzhen Gospell Smarthome Electronic Co., Ltd.			
Address	East of 01st-04st Floor, Block A, No.1 Industrial park, Fenghuanggang, South of No.1 Baotian Road, Xixiang street, Bao'an District, Shenzhen City, Guangdong Province 518126, P.R.China			
Factory	Shenzhen Gospell Smarthome Electronic Co., Ltd.			
Address	East of 01st-04st Floor, Block A, No.1 Industrial park, Fenghuanggang, South of No.1 Baotian Road, Xixiang street, Bao'an District, Shenzhen City, Guangdong Province 518126, P.R.China			
Product Designation	Four-Channel Wireless Digital Surverillance System			
Brand Name	N/A			
Test Model	GD8005			
Date of test	Apr. 30, 2019 to May 09, 2019			
Deviation	Name			
Deviation	None			
Condition of Test Sample				

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) 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	Drave	n.li
	Draven Li(Li Ming Liang)	May 09, 2019
Reviewed By	Max 21	lang
	Max Zhang(Zhang Yi)	May 09, 2019
Approved By	Forrest	vei vei
	Forrest Lei(Lei Yonggang) Authorized Officer	May 09, 2019

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2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as "Four-Channel Wireless Digital Surverillance System". 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

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Operation Frequency	2.412 GHz~2.462GHz
Output Power(Average)	IEEE 802.11b:14.75dBm; IEEE 802.11g:11.14dBm; IEEE 802.11n(20):10.66dBm; IEEE 802.11n(40):10.98dBm
Modulation	DSSS(DBPSK/DQPSK/CCK);OFDM(BPSK/QPSK/16-QAM/64-QAM)
Number of channels	11
Hardware Version	V103P2
Software Version	V1.0
Antenna Designation	External antenna(Use of reverse SMA connector)
Antenna Gain	3.0dBi
Power Supply	DC 12V by adapter

2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency
@ Figure Company	20 100 T	2412 MHZ
LGC I	2	2417 MHZ
700	3 4 5	2422 MHZ
S S S S S S S S S S S S S S S S S S S		2427 MHZ
	5	2432 MHZ
2400~2483.5MHZ	6	2437 MHZ
The Third Company	7 © Manual Comment	2442 MHZ
Additional Completion	8 8	2447 MHZ
NGO NG	9	2452 MHZ
:111	10	2457 MHZ
The Manufacture (S. S. J.	11 60	2462 MHZ

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

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2.3. IEEE 802.11N MODULATION SCHEME

MCS Index	Nss	Modulation	R	NBPSC	NC	BPS	NDI	NDBPS		Data NDBPS rate(Mbps) 800nsGI	
					20MHz	40MHz	20MHz	40MHz	20MHz	40MHz	
0	1	BPSK	1/2	15	52	108	26	54	6.5	13.5	
1, 5	1 1 200	QPSK	1/2	2	104	216	52	108	13.0	27.0	
2	1 8	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	M. Janon of	64-QAM	2/3	6	312	648	208	432	52.0	108.0	
6	1	64-QAM	3/4	6	312	648	234	489	58.5	121.5	
7	1	64-QAM	5/6	6	312	648	260	540	65.0	135.0	

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

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

This submittal(s) (test report) is intended for **FCC ID: TW5GD8005** filing to comply with the FCC Part 15 requirements.

2.5. TEST METHODOLOGY

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

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

2.6. SPECIAL ACCESSORIES

Refer to section 5.2.

2.7. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

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3. MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in measurement" (GUM) published by CISPR and ANSI.

- Uncertainty of Conducted Emission, Uc = ±3.2 dB
- Uncertainty of Radiated Emission below 1GHz, Uc = ±3.9 dB
- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.8 dB

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4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION					
KA Juliance	The state of the s	Low channel TX	CO	100		
2 @	E Andro Golden	Middle channel TX		TE Williams		
3		High channel TX	K Compliance	® # Jahon of Golden		
4	拉	Normal operating	Managhation of Globa	10 C		

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

Note:

- 1. The EUT has been set to operate continuously on the lowest, middle and highest operation frequency Individually, and the eut is operating at its maximum duty cycle>or equal 98%
- 2. All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.

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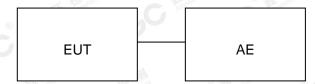


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5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Radiated Emission Configure:



Conducted Emission Configure:

EUT	STA MARIE OF THE STATE OF THE S	AE
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5.2. EQUIPMENT USED IN EUT SYSTEM

	Item Equipment		Model No.	ID or Specification	Remark
A 0,0	1,0	Four-Channel Wireless Digital Surverillance System	GD8005	TW5GD8005	EUT
	2	Adapter	KT12W120100US	100-240V, 50-60HZ, 0.4A 12V, 1A	AE

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	Line Conduction Emission	Compliant

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6. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd			
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China			
Designation Number	CN1259			
FCC Test Firm Registration Number	975832			
A2LA Cert. No.	5054.02			
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA			

TEST EQUIPMENT OF CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	Jun. 12, 2018	Jun. 11, 2019
LISN	R&S	ESH2-Z5	100086	Aug. 28, 2018	Aug. 27, 2019

TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	Jun. 12, 2018	Jun. 11, 2019
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec. 20, 2018	Dec. 19, 2019
Power sensor	Aglient	U2021XA	MY54110007	Sep. 20, 2018	Sep. 19, 2019
2.4GHz Fliter	Micro-tronics	087	N/A	Jun. 12, 2018	Jun. 11, 2019
Attenuator	Weinachel Corp	58-30-33	N/A	Jun. 12, 2018	Jun. 11, 2019
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Sep. 21, 2017	Sep. 20, 2020
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	Jun. 14, 2018	Jun. 13, 2020
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	May. 26, 2018	May. 25, 2020
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Oct. 25, 2018	Oct. 24, 2019
ANTENNA	SCHWARZBECK	VULB9168	D69250	Sep. 28, 2017	Sep. 27, 2019

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7. OUTPUT POWER

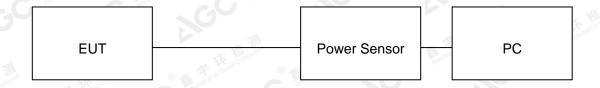
7.1. MEASUREMENT PROCEDURE

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

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



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7.3. LIMITS AND MEASUREMENT RESULT

TEST ITEM	OUTPUT POWER	100	70°	CO
TEST MODE	802.11b with data rate 1		litt:	· · · · · · · · · · · · · · · · · · ·

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	14.49	30	Pass
2.437	14.75	30	Pass
2.462	14.37	30	Pass

TEST ITEM	OUTPUT POWER	® Metablional Global	(8) Allestation of C	CO
TEST MODE	802.11g with data rate 6	30 %		· [iii]

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	11.14	30	Pass
2.437	10.93	30	Pass
2.462	10.78	30	Pass

TEST ITEM	OUTPUT POWER	III	玉 <u> </u>
TEST MODE	802.11n 20 with data rate 6.5	The Compliance	© Filterwind Columb

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	10.66	30	Pass
2.437	10.52	30	Pass
2.462	10.14	30	Pass

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TEST ITEM	OUTPUT POWER	® Mastellon of Global	® # Colobal Co	© Attestation of C
TEST MODE	802.11n 40 with data rate 13.5			,

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.422	10.98	30	Pass
2.437	9.87	30	Pass
2.452	9.71	30	Pass

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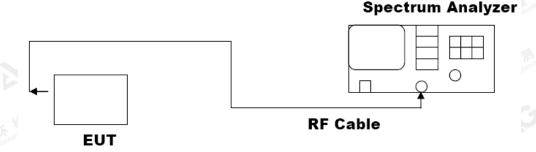
8. 6 DB BANDWIDTH

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 ≥ 3×RBW.
- 4. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to ANSI C63.10 (2013) for compliance to FCC 47CFR 15.247 requirements.

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



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8.3. LIMITS AND MEASUREMENT RESULTS

TEST ITEM	6DB BANDWIDTH	(S) Allestation of C.	(8) Attestation of Good	C Mesuliono
TEST MODE	802.11b with data rate 11	0 10		

	LIMITS AND MEASU	REMENT RESULT		
Applicable Limits	Applicable Limits			
	Test Data	(MHz)	Criteria	
\GO	Low Channel	8.572	PASS	
>500KHZ	Middle Channel	9.038	PASS	
® Marie plation of Global C	High Channel	8.550	PASS	

TEST ITEM	6DB BANDWIDTH	© Attestation of Co.	20	CO
TEST MODE	802.11g with data rate 54	G B	:10	

	LIMITS AND MEASU	REMENT RESULT		
Amaliaahla Limita	Applicable Limits			
Applicable Limits	Test Data	Criteria		
NO.	Low Channel	16.36	PASS	
>500KHZ	Middle Channel	16.37	PASS	
© Martin di Global Cur	High Channel	16.36	PASS	

TEST ITEM	6DB BANDWIDTH	® Milestation of Global Co	(S) Attestation of Grant	300	NO
TEST MODE	802.11n 20 with data	rate 65		:1111	抓

	LIMITS AND MEASU	IREMENT RESULT			
Applicable Limits	Applicable Limits				
	Test Data	a (MHz)	Criteria		
	Low Channel	17.32	PASS		
>500KHZ	Middle Channel	17.56	PASS		
John Commin @ Martin of Charles Comm	High Channel	17.56	PASS		

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TEST ITEM	6DB BANDWIDTH	(C) Sittle tallon of Global	© Management of Clobal Co	(a) Market allon of Co
TEST MODE	802.11n 40 with data rate 135			,0

LIMITS AND MEASUREMENT RESULT					
Amplicable Limite	Applicable Limits				
Applicable Limits	Test Data ((MHz)	Criteria		
CC *	Low Channel	35.77	PASS		
>500KHZ	Middle Channel	35.95	PASS		
	High Channel	36.07	PASS		

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802.11b TEST RESULT TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



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TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



802.11g TEST RESULT
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



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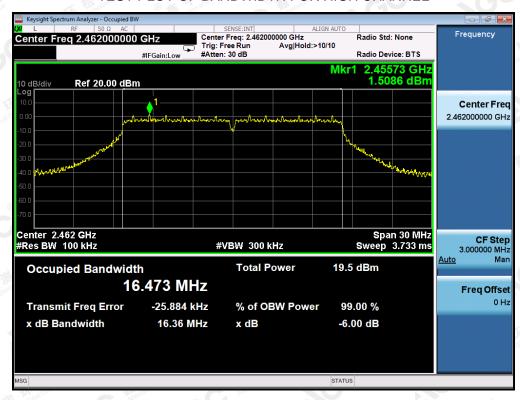
VGC 8



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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802.11n (20) TEST RESULT TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

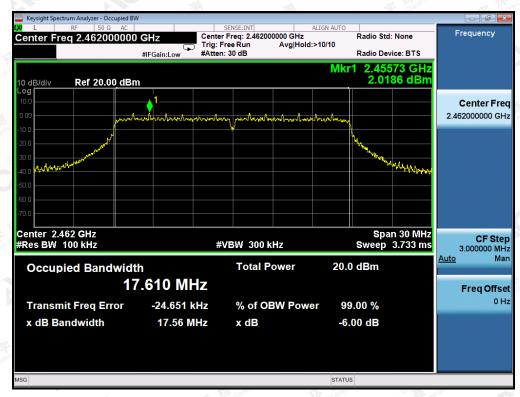


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TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



802.11n (40) TEST RESULT
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



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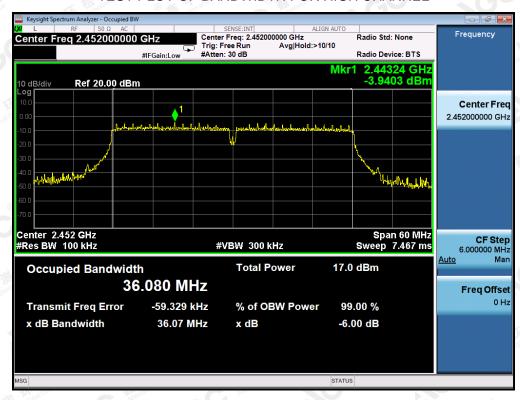
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TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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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 ANSI C63.10 (2013) for compliance to FCC 47CFR 15.247 requirements. Owing to satisfy the requirements of the number of measurement points, we set the RBW=1MHz, VBW>RBW, scan up through 10th harmonic, and consider the tested results as the worst case, if the tested results conform to the requirement, we can deem that the real tested results(set the RBW=100KHz, VBW>RBW) are conform to the requirement.

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

The same as described in section 8.2.

9.3. MEASUREMENT EQUIPMENT USEDJN

The same as described in section 6.

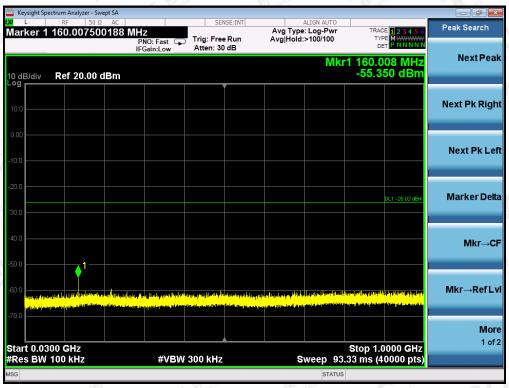
9.4. LIMITS AND MEASUREMENT RESULT

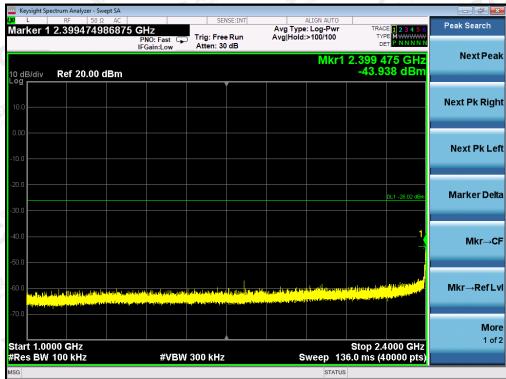
LIMITS AND MEASUREMENT RESULT					
Annelia de la Limita	Measurement Result				
Applicable Limits	Test Data	Criteria			
In any 100 KHz Bandwidth Outside the	At least -30dBc than the limit	F Cook Company			
frequency band in which the spread spectrum	Specified on the BOTTOM	PASS			
intentional radiator is operating, the radio frequency	Channel				
power that is produce by the intentional radiator					
shall be at least 30 dB below that in 100KHz		Thotal Compliant			
bandwidth within the band that contains the highest		® Marting and Color			
level of the desired power.	At least -30dBc than the limit	PASS			
In addition, radiation emissions which fall in the	Specified on the TOP Channel	FAGG			
restricted bands, as defined in §15.205(a), must also		-711			
comply with the radiated emission limits specified		Managlance @ # Find			
in§15.209(a))	M See Front	abal C Allester			

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





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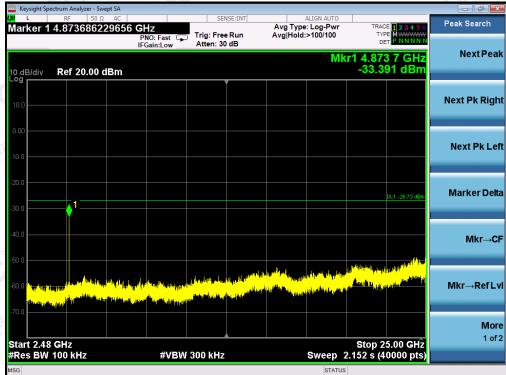
TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11b FOR MODULATION IN MIDDLE CHANNEL



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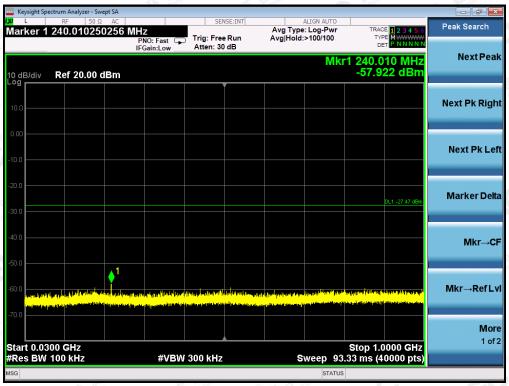


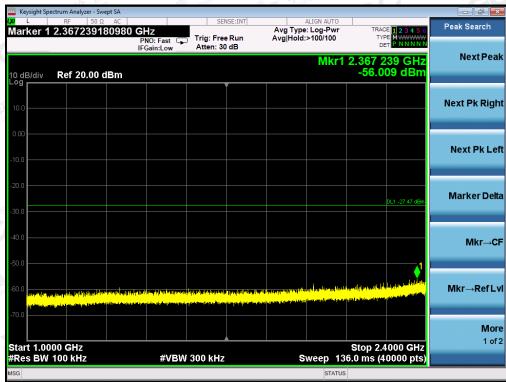


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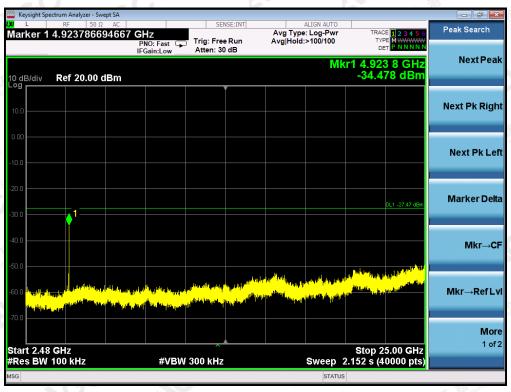
TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11b FOR MODULATION IN HIGH CHANNEL





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



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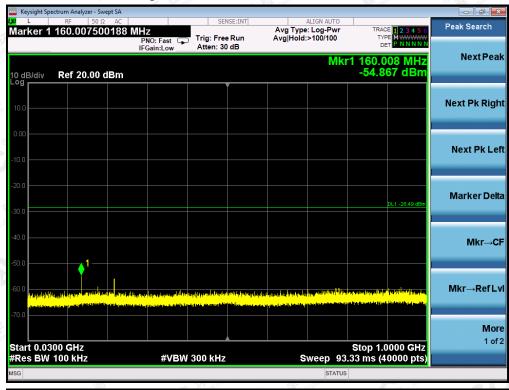


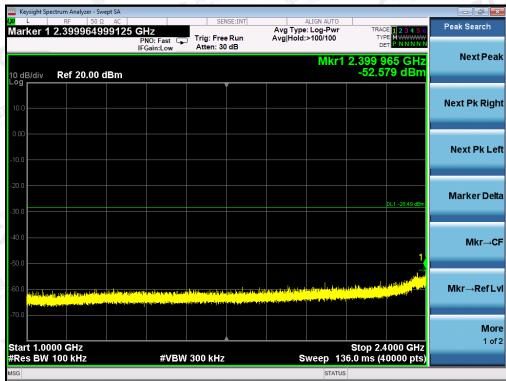
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TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11g FOR MODULATION IN MIDDLE CHANNEL





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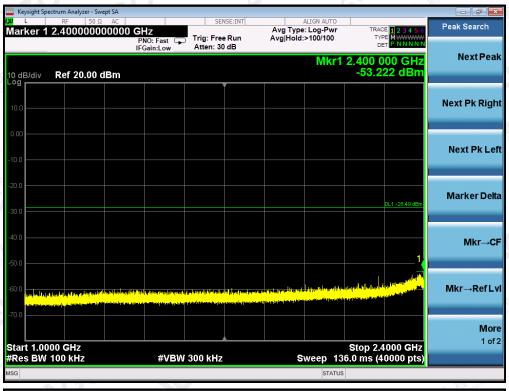


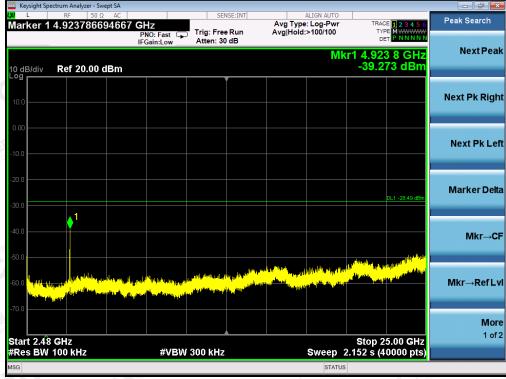
TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11g FOR MODULATION IN HIGH CHANNEL



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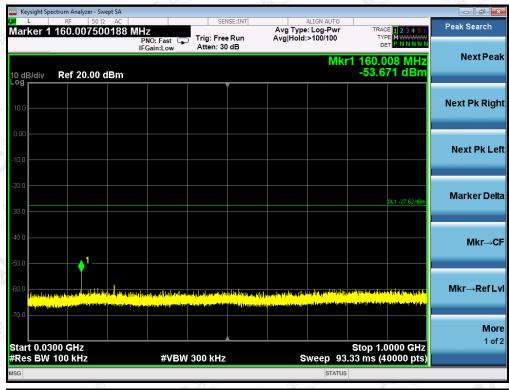




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TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF 802.11n20 FOR MODULATION IN LOW CHANNEL



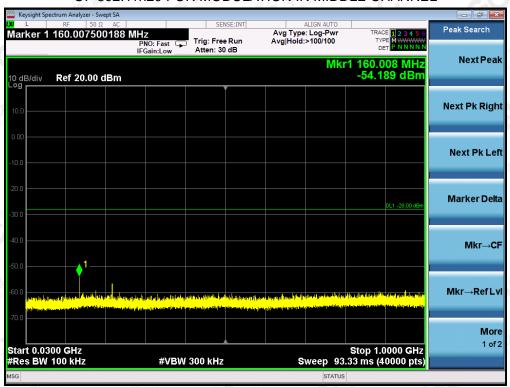


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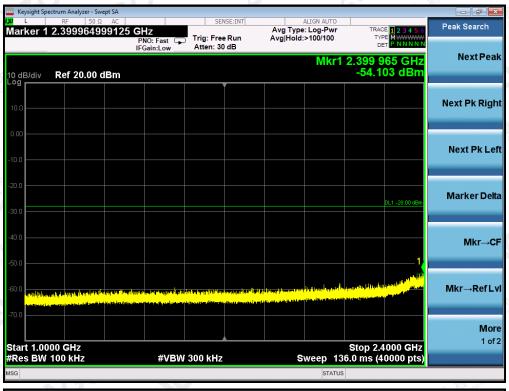


TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11n20 FOR MODULATION IN MIDDLE CHANNEL



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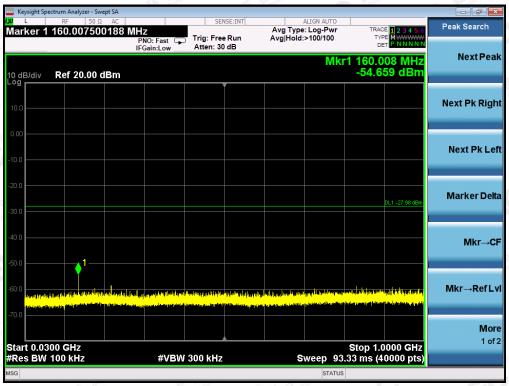


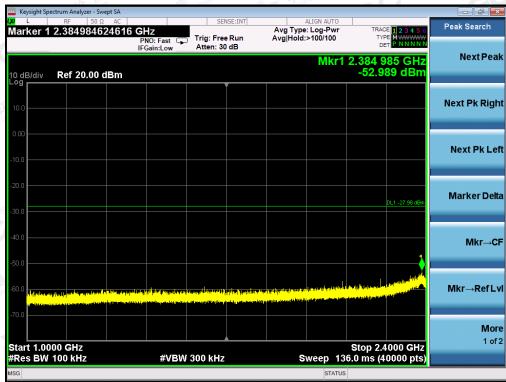


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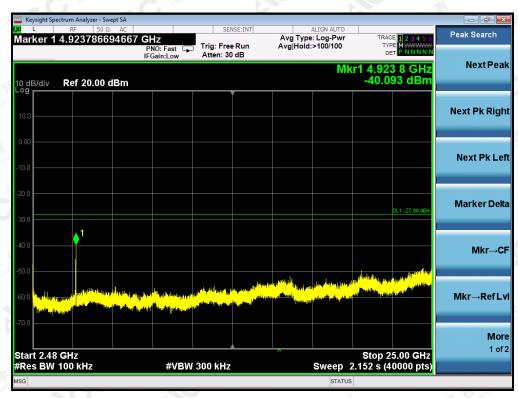
TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11n20 FOR MODULATION IN HIGH CHANNEL



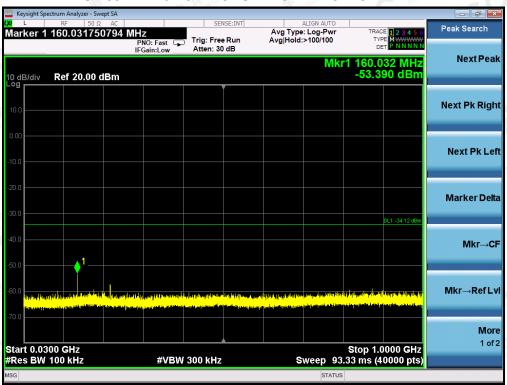


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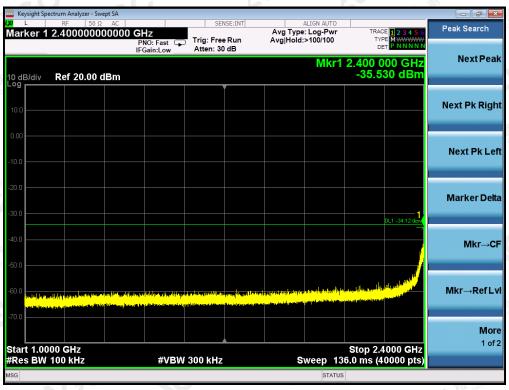
TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF 802.11n40 FOR MODULATION IN LOW CHANNEL

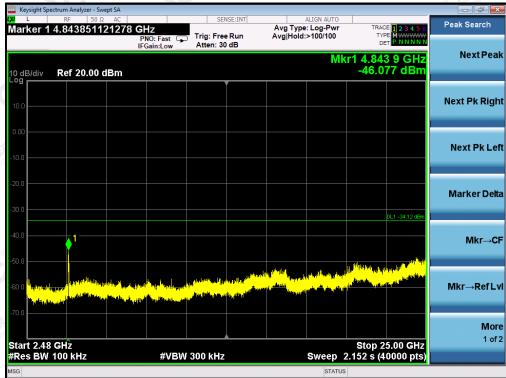


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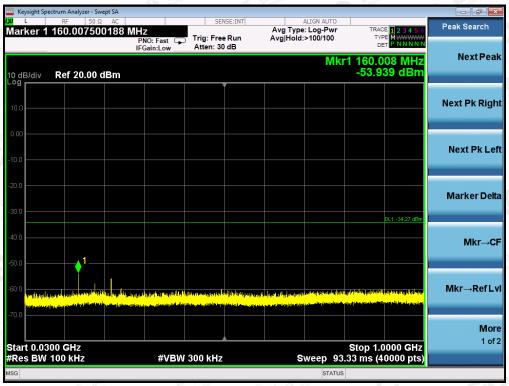


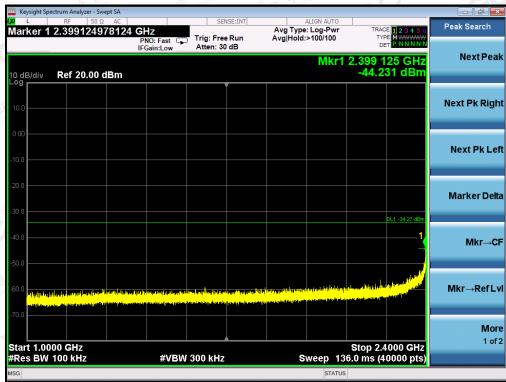


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TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11n40 FOR MODULATION IN MIDDLE CHANNEL

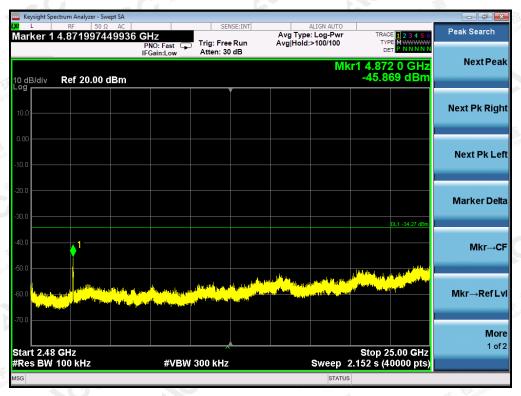




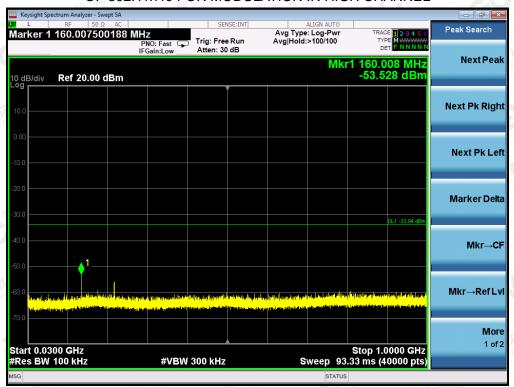
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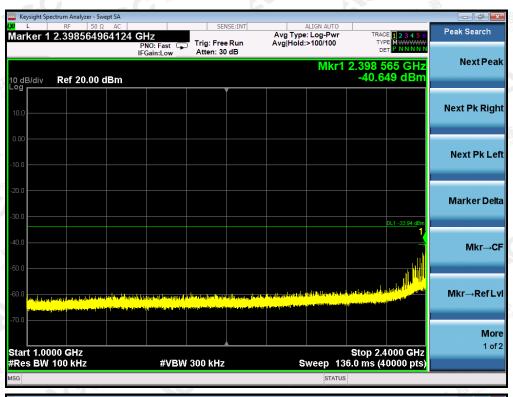
TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11n40 FOR MODULATION IN HIGH CHANNEL



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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 AVGPSD-1 in the ANSI C63.10 (2013) item 11.10 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 SPECTRAL DENSITY	The Mariane	The Compliance (8)
TEST MODE	802.11b with data rate 1	© Mestion of the Co	The state of the s

Channel No.	Power density (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-1.454	8 0	Pass
Middle Channel	-1.033	8	Pass
High Channel	-2.155	8	Pass

TEST ITEM	POWER SPECTRAL DENSITY		10 10 11
TEST MODE	802.11g with data rate 6	The transfer of the state of th	® Management Control

Channel No.	Power density (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-3.313	8 Final Company	Pass
Middle Channel	-2.920	8	Pass
High Channel	-3.576	8	Pass

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TEST ITEM	POWER SPECTRAL DENSITY	The State Compilance	T. T
TEST MODE	802.11n 20 with data rate 6.5	C Mestadion of C	Additional Co. Co. Additional Co.

Channel No.	Power density (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-2.339	** *** *** *** *** *** *** *** *** ***	Pass
Middle Channel	-3.727	8	Pass
High Channel	-3.527	8 1	Pass

TEST ITEM	POWER SPECTRAL DENSITY	NO at	:111
TEST MODE	802.11n 40 with data rate 13.5	The Compliance	The State Communication (6)

Channel No.	Power density (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-9.070	8 7 7	Pass
Middle Channel	-8.895	8 0	Pass
High Channel	-8.872	8	Pass

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



TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL



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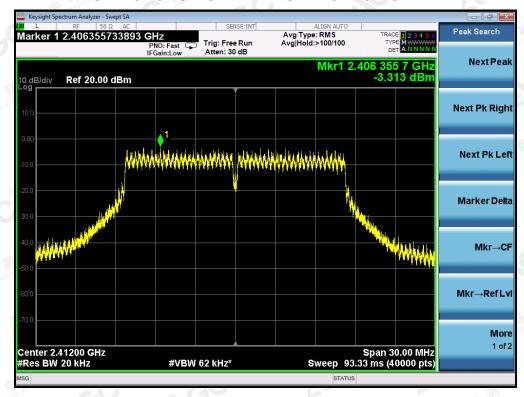
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TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL



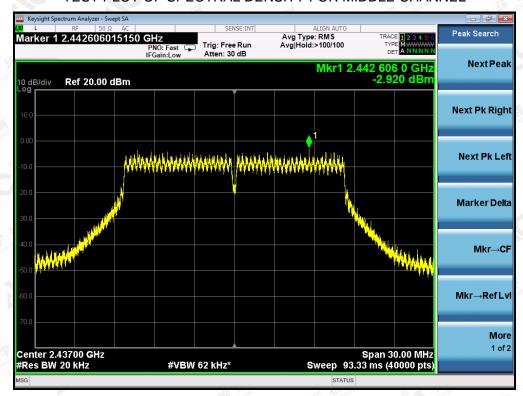
802.11g TEST RESULT
TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL



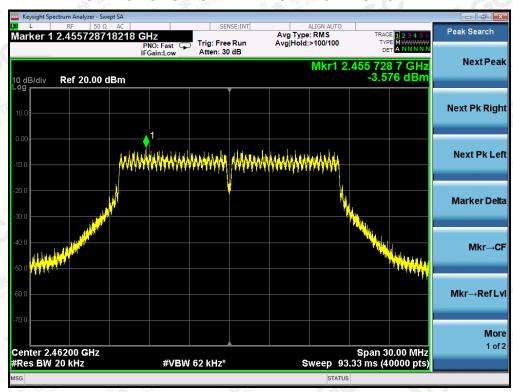
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TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL



TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL



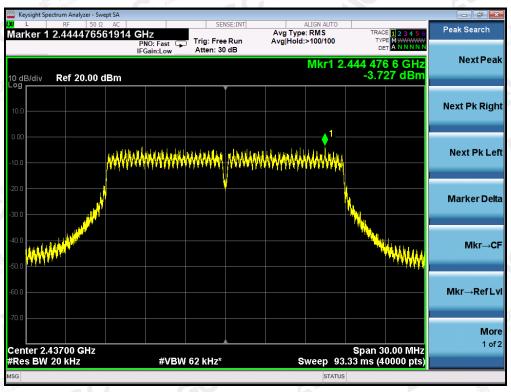
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802.11n 20 TEST RESULT TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL



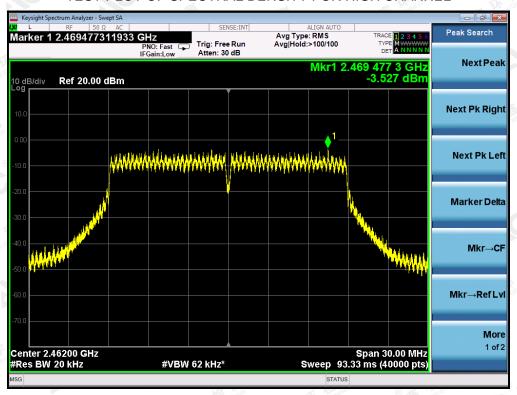
TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL



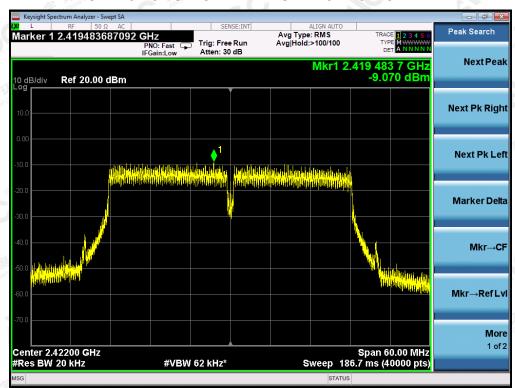
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TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL



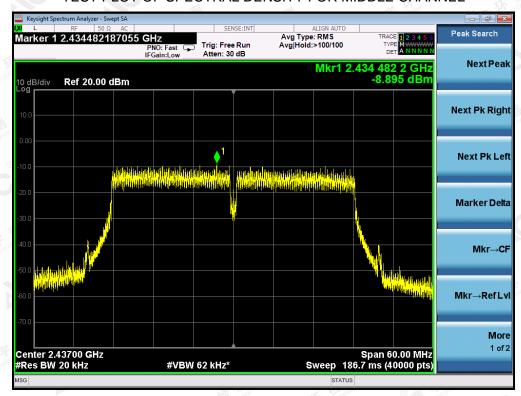
802.11n 40 TEST RESULT
TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL



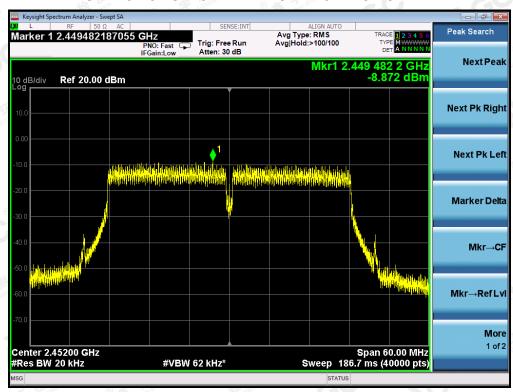
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TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL



TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL



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

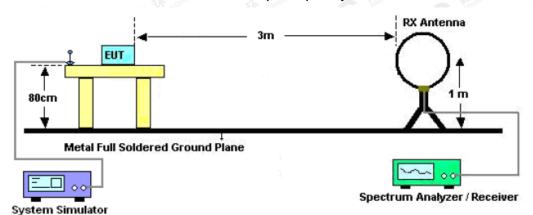
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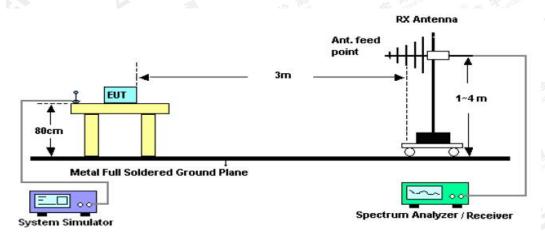


11.2. TEST SETUP

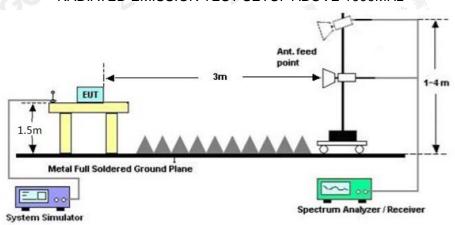
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



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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

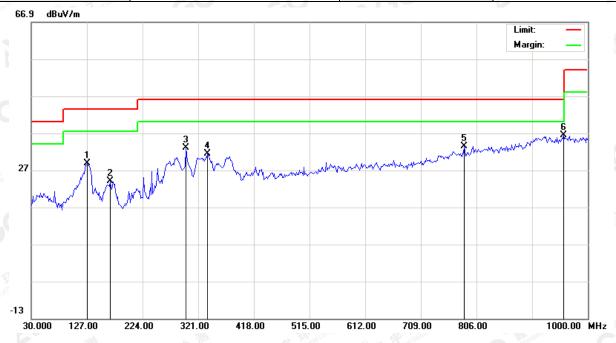
No emission found between lowest internal used/generated frequencies to 30MHz

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RADIATED EMISSION BELOW 1GHZ

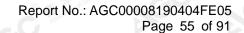
EUT	Four-Channel Wireless Digital Surverillance System	Model Name	GD8005
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Horizontal



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		127.0000	10.31	18.41	28.72	43.50	-14.78	peak			
2		167.4167	5.66	18.43	24.09	43.50	-19.41	peak			
3		299.9833	13.46	19.47	32.93	46.00	-13.07	peak			
4		337.1666	10.61	20.77	31.38	46.00	-14.62	peak			
5		784.9833	3.41	30.07	33.48	46.00	-12.52	peak			
6	*	957.9667	4.26	32.20	36.46	46.00	-9.54	peak			

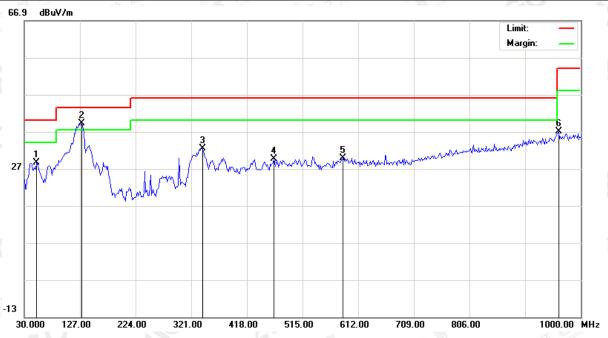
RESULT: PASS

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EUT	Four-Channel Wireless Digital Surverillance System	Model Name	GD8005
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Vertical



No	. M	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		51.0167	8.97	19.64	28.61	40.00	-11.39	peak			
2	*	130.2332	20.62	18.61	39.23	43.50	-4.27	peak			
3		340.4000	11.46	20.89	32.35	46.00	-13.65	peak			
. 4		464.8833	5.33	24.28	29.61	46.00	-16.39	peak			
5		586.1332	3.15	26.68	29.83	46.00	-16.17	peak			
6		961.2000	4.79	32.23	37.02	54.00	-16.98	peak			

RESULT: PASS

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

- 2. The "Factor" value can be calculated automatically by software of measurement system.
- 3. All test modes had been pre-tested. The 802.11b at low channel is the worst case and recorded in the report.

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RADIATED EMISSION ABOVE 1GHZ

EUT	Four-Channel Wireless Digital Surverillance System	Model Name	GD8005
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 Time
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4824.115	44.47	3.72	48.19	74	-25.81	peak
4824.101	38.26	3.72	41.98	54	-12.02	AVG
7236.080	42.29	8.15	50.44	74	-23.56	peak
7236.050	36.88	8.15	45.03	54	-8.97	AVG
Attestu	Attestant	C Anti			-011	litte:
					KET Mayor	Kil mpliance
Remark:		LITT:	illi A	· 下	obal Comp	F of Global
actor = Anter	na Factor + Cable	Loss – Pre-	amplifier.	® Stallon of	All	3 statio

EUT	Four-Channel Wireless Digital Surverillance System	Model Name	GD8005
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Tost Mode	802.11b with date rate 1	Antonna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Tree
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4824.062	43.85	3.72	47.57	74	-26.43	peak
4824.059	39.19	3.72	42.91	54	-11.09	AVG
7236.058	42.42	8.15	50.57	74	-23.43	peak
7236.031	37.51	8.15	45.66	54	-8.34	AVG
Compliant ®	atation of C	Attestation	F.U .			
- G				- 11	-50	4
Remark:				AST MALOS	TK KE compilar	(° (8) 444 (1)
Factor = Anten	na Factor + Cabl	le Loss – Pre-	amplifier.	I Slobal Comb	(S) # Global	Alless

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EUT	Four-Channel Wireless Digital Surverillance System	Model Name	GD8005
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 Time
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4874.024	47.26	3.75	51.01	74	-22.99	peak
4874.114	42.18	3.75	45.93	54	-8.07	AVG
7311.025	41.33	8.16	49.49	74	-24.51	peak
7311.111	37.29	8.16	45.45	54	-8.55	AVG
Attest	Attestan				-aul	litte:
					A THE	TK Kil mpliance
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actor = Anter	nna Factor + Cable	e Loss – Pre	-amplifier.	® Market lation of	Altestal	
A	-7/7/2	34 10	: GIO			

EUT	Four-Channel Wireless Digital Surverillance System	Model Name	GD8005
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHZ	Antenna	Vertical

(dB)	Value Type
4 04	200
	peak
9.89	AVG
22.9	peak
6.27	AVG
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Global	
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EUT	Four-Channel Wireless Digital Surverillance System	Model Name	GD8005
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 Time
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4924.103	43.11	3.81	46.92	74	-27.08	peak
4924.054	40.32	3.81	44.13	54	-9.87	AVG
7386.041	40.85	8.19	49.04	74	-24.96	peak
7386.080	36.69	8.19	44.88	54	-9.12	AVG
Altesur	Attestan	-G Alle			lim	litte:
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EUT	Four-Channel Wireless Digital Surverillance System	Model Name	GD8005
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 Time
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4924.054	44.16	3.81	47.97	74	-26.03	peak
4924.072	39.94	3.81	43.75	54	-10.25	AVG
7386.077	38.28	8.19	46.47	74	-27.53	peak
7386.076	37.34	8.19	45.53	54	-8.47	AVG
40					**************************************	Y
Remark:			-1111	Ki Compliance	FA bal Comp	Willes
actor = Anter	nna Factor + Cable	Loss - Pre-	amplifier.	of Global (8 Figure of Gu	

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.

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12. BAND EDGE EMISSION

12.1. MEASUREMENT PROCEDURE

Radiated restricted band edge measurements

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

12.2. TEST SET-UP

same as 11.2

Note:

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

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12.3. TEST RESULT

EUT	Four-Channel Wireless Digital Surverillance System	Model Name	GD8005
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHZ	Antenna	Horizontal

PK



AV



RESULT: PASS

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EUT	Four-Channel Wireless Digital Surverillance System	Model Name	GD8005
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHZ	Antenna	Vertical

PK



AV



RESULT: PASS

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EUT	Four-Channel Wireless Digital Surverillance System	Model Name	GD8005
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHZ	Antenna	Horizontal

PK



AV



RESULT: PASS

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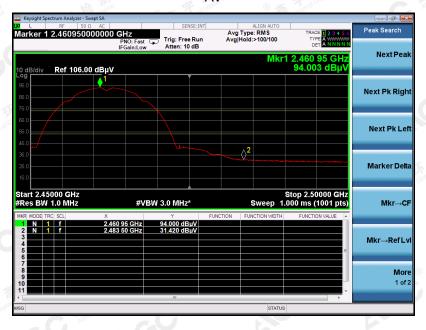


EUT	Four-Channel Wireless Digital Surverillance System	Model Name	GD8005
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHZ	Antenna	Vertical

PK



AV



RESULT: PASS

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