



 FCC ID:
 N82-KOHLER036
 ISED No.:
 4554A-KOHLER036
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 Report No.:
 T190220D01-RP
 Rev.:
 02

FCC RADIO TEST REPORT FCC 47 CFR PART 15 SUBPART C INDUSTRY CANADA RSS-310

Test Standard	FCC Part 15.249 IC RSS-310 issue 4 and IC RSS-GEN issue 5
Trade name	KOHLER
Product name	New Microwave Sensor
Model No.	1384310, 1384311, 1384312, 1384313, 1384314, 1386373, 1386374, 1386375, 1386376
Test Result	Pass

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc. (Wugu Laboratory)

Approved by:

Tested by:

Komil Tson

Kevin Tsai **Deputy Manager**

Dally. Hong

Dally Hong Engineer

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部分複製。

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SGS Compliance Certification Service Inc. 程智科技股份有限公司

No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan / 新北市五股區五工六路 11 號 t:(886-2) 2299-9720 f:(886-2) 2298-1882 www.sgs.tw www.ccsrf.com



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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	March 20, 2019	Initial Issue	ALL	May Lin
01	April 03, 2019	1. Revised the EUT information measurement uncertainty test procedure test plot and test results.	P.4, P.6, P.13-14, P.17, P.20-21, P.23, P.26-31	May Lin
02	April 11, 2019	1. Revised the EUT information and test procedure.	P.4, P.18	May Lin



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1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	Kohler Co. 444 Highland Drive Kohler, WI 53044 United States
Manufacturer	Shanghai Kohler Electronics., Ltd. No. 1955, Fengxiang Road, Baoshan Area, Shanghai, PRC Post code: 200444
Equipment	New Microwave Sensor
Model Name	1384310, 1384311, 1384312, 1384313, 1384314, 1386373, 1386374, 1386375, 1386376
Model Discrepancy	See the following Note 1
EUT Functions	24G Radar
Received Date	February 20, 2019
Date of Test	March 06 ~ April 03, 2019
Output Power	Peak : 79.83dBuV/m Average : 64.65dBuV/m
Power Operation	 AC DC Type: Battery DC Power Supply: 5V External DC adapter

Note:

1. Difference of the five samples (list on this report) please see as below:

No.	New Microwave Sensor	Part No./ Material No.	Difference	Cable Length (mm)
		1384310	Main Model	800+
		1384311	Cable Length & Order	500 - 600
		1384312	Cable Length	250 - 300
		1384313	Cable Length & Connector Type	800+
1 Right-angle	Right-angle	Right-angle 1386373	Cable Length & Connector Type	500+
		1386374	Cable Length & Connector Type	500+
		1386375	Cable Length & Connector Type	500+
		1386376	Cable Length & Connector Type	500+
2	Chamfer-angle	1384314	Main Model	700+



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1.2 EUT CHANNEL INFORMATION

Center Frequency Frequency Range	24.125GHz(24GHz-24.25GHz)
Modulation Type	FMCW
Number of channel	1

1.3 ANTENNA INFORMATION

Antenna Type	 PIFA PCB Dipole Printed Coils
Antenna Gain	0 dBi
Antenna Connector	N/A



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1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	N/A
Emission bandwidth, 20dB bandwidth	+/- 0.0014
RF output power, conducted	+/- 1.14
Power density, conducted	+/- 1.40
3M Semi Anechoic Chamber / 30M~200M	+/- 4.12
3M Semi Anechoic Chamber / 200M~1000M	+/- 4.68
3M Semi Anechoic Chamber / 1G~8G	+/- 5.18
3M Semi Anechoic Chamber / 8G~18G	+/- 5.47
3M Semi Anechoic Chamber / 18G~26G	+/- 3.81
3M Semi Anechoic Chamber / 26G~40G	+/- 3.87
3M Semi Anechoic Chamber / 40G~60G	+/- 1.8509
3M Semi Anechoic Chamber / 60G~90G	+/- 3.43
3M Semi Anechoic Chamber / 90G~140G	+/- 3.52

Remark:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2

2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.



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1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

Test site	Test Engineer	Remark
AC Conduction Room	-	-
Radiation	Dally Hong	-
RF Conducted	Dally Hong	-

Remark: The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.



1.6 INSTRUMENT CALIBRATION

3M 966A Chamber Test Site							
Name of Equipment	Manufacturer	Model	Serial Number	Cal Date	Cal Due		
Band Reject Filters	MICRO TRONICS	BRM 50702	120	05/14/2018	05/13/2019		
Bilog Antenna	Sunol Sciences	JB3	A030105	07/13/2018	07/12/2019		
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	06/29/2018	06/28/2019		
Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	06/29/2018	06/28/2019		
Digital Thermo- Hygro Meter	WISEWIND	1206	D07	01/30/2019	01/29/2020		
double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	08/20/2018	08/19/2019		
Loop Ant	COM-POWER	AL-130	121051	03/21/2018	03/20/2019		
Pre-Amplifier	EMEC	EM330	060609	06/29/2018	06/28/2019		
Pre-Amplifier	HP	8449B	3008A00965	06/29/2018	06/28/2019		
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	05/31/2018	05/30/2019		
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R		
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R		
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R		
Mixer	Keysight	11974VE01	MY30012006	09/01/2016	08/31/2019		
Mixer	Keysight	11974VE01	MY30012006	08/19/2016	08/18/2019		
Mixer	Keysight	N9029AV08	US53250002	08/19/2016	08/18/2019		
Mixer	Keysight	N9029AV05	US53250003	08/24/2016	08/23/2019		
Horn Antenna	CMI	WR15	WR15-01	08/29/2016	08/28/2019		
Horn Antenna	CMI	WR12	WR12-01	08/19/2016	09/18/2019		
Horn Antenna	CMI	WR8.0	WR8-01	05/30/2016	05/29/2019		
Horn Antenna	CMI	WR8.0	WR8-02	08/24/2016	08/23/2019		
Horn Antenna	CMI	WR5.1	WR5.1-01	08/29/2016	08/28/2019		
PXA Spectrum Analyzer	Agilent	N9030A	MY53120760	04/09/2018	04/08/2019		

Remark: Each piece of equipment is scheduled for calibration once a year.



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1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

EUT Accessories Equipment					
No. Equipment Brand Model Series No. FCC ID					
	N/A				

	Support Equipment						
No.	No. Equipment Brand Model Series No. FCC ID						
1.	NB	Lenovo	Thinkpad L460	N/A	N/A		
2.	USB Test Board N/A test plate 2 N/A N/A						

1.8 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 15.249, RSS-310 Issue 4 and RSS-GEN Issue 5.



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2. TEST SUMMERY

FCC Standard Section	IC Standard Section	Report Section	Test Item	Result
15.203	-	1.3	Antenna Requirement	Pass
15.207(a)	RSS-GEN 8.8	4.1	AC Conducted Emission	N/A
15.215	RSS-210	4.2	20dB Bandwidth and Occupied Bandwidth (99%)	Pass
15.249(a)	RSS-310 3.10	4.3	Filed strength of fundamental	Pass
15.249(a)	RSS-GEN 8.9, 8.10	4.3	Radiation Spurious Emission	Pass



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3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF MEASUREMENT

Radiated Emission Measurement Above 1G					
Test Condition	Band edge, Emission for Unwanted and Fundamental				
Power supply Mode	Power supply Mode Mode 1: EUT power by host system (DC 5V)				
Worst Mode	☑ Mode 1				
Worst Position	 Placed in fixed position. Placed in fixed position at X-Plane (E2-Plane) Placed in fixed position at Y-Plane (E1-Plane) Placed in fixed position at Z-Plane (H-Plane) 				
Worst Polarity					

Radiated Emission Measurement Below 1G						
Test Condition	Test Condition Radiated Emission Below 1G					
Power supply Mode	Power supply Mode Mode 1: EUT power by host system (DC 5V)					
Worst Mode Mode 1 Mode 2 Mode 3 Mode 4						

Remark:

1. The worst mode was record in this test report.

2. EUT pre-scanned in three axis, X, Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case (X-Plane and Horizontal) were recorded in this report



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4. TEST RESULT

4.1 AC POWER LINE CONDUCTED EMISSION

4.1.1 Test Limit

According to §15.207(a) and RSS-GEN section 8.8,

Frequency Range	Limits(dBµV)		
(MHz)	Quasi-peak	Average	
0.15 to 0.50	66 to 56*	56 to 46*	
0.50 to 5	56	46	
5 to 30	60	50	

* Decreases with the logarithm of the frequency.

4.1.2 Test Procedure

1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.

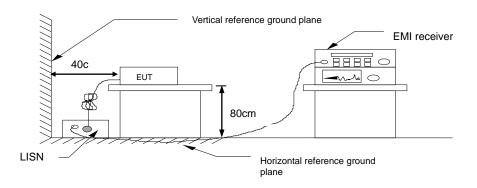
2. EUT connected to the line impedance stabilization network (LISN)

3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.

4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

5. Recorded Line for Neutral and Line.

4.1.3 Test Setup



4.1.4 Test Result

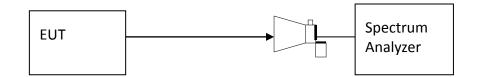
Not applicable, because EUT not connect to AC Main Source direct.



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4.220dB BANDWIDTH AND OCCUPIED BANDWIDTH (99%)

TEST CONFIGURATION



TEST PROCEDURE

- 1. Place the EUT on the table and set it in the transmitting mode.
- 2. SA set RBW = 1% ~ 5% OBW, VBW = three times the RBW and Detector = Peak, to measurement 99% Bandwidth and 20dB Bandwidth
- 3. Measure and record the result of 20 dB Bandwidth and 99% Bandwidth. in the test report.

TEST RESULTS

No non-compliance noted

Test Condition	Frequency(Hz)	Occupied Bandwidth 99% (MHz)	20 dB Bandwidth (MHz)
24G Radar	24G	211.866	218.81



Test Plot

20dB Bandwidth

Spectrum													
Ref Level							5 MHz						
Att 🗧	31	D dB	🛛 👄 SWT	500 ms	-	/BW :	LO MHZ	Mode	Auto Sw	еер			
⊖1Pk View													
									D3[1]				0.30 dB
10 dBm									_			2	18.810 MHz
								M1	M1[1]				2.11 dBm
0 dBm	01 2.11	ıb di	Bm				······	<u></u>		HOW THE	haar.	24. 	117370 GHz
o ubiii		اللو									·· ···································	and the second of the second of the second of the second s	4 I
-10 dBm		y.											<u> </u>
		⊈											dia 🛛
-20 dBm	D2	-17	.890 dBm-			-							<u> </u>
		r											44
-30 dBm				_		_							
	un all a second												Mun
-40 dBm		_		_		_							0 Million and
-50 dBm		_		_									-
-60 dBm		-		_		_							
-70 dBm		-		-		-							F2
	F	1											
CF 24.1 GH	z						691	pts			I	Span	300.0 MHz
Marker													
Type Ref	Trc		X-val	ue	1	Y-1	zalue	Fi	unction	1	Fun	ction Resu	t I
M1	1			1737 GF	lz 🗌		2.11 dB						-
M2	1		24.00	0232 GH	1z	-1	7.40 dB	m					
D3 M2	2 1		21	8.81 MH	Ηz		0.30 c	IB					
	1	_							Measuring			-	03.04.2019
													09:29:32 /

Date: 3.APR.2019 09:29:32

BANDWIDTH (99%)

Spectrum					
Ref Level 20.00 dB	m	🔵 RBW 5 MHz			
Att 30 c	B 👄 SWT 500 m	s 👄 VBW 10 MHz	Mode Auto Swe	ер	
∋1Pk View					
			M1[1]		0.18 dBr
10 dBm					24.215920 GH
			Occ Bw		211.866859624 MH
					M1
	#	www.u.u.			
-10 dBm					
-20 dBm					
					h
-30 dBm					34.1
-40 dBm					Meder
-40 0011					
-50 dBm					
-60 dBm					
-70 dBm					
Start 23.95 GHz	1 1	691	pts		Stop 24.25 GHz
Marker					
Type Ref Trc	X-value	Y-value	Function	F	unction Result
M1 1	24.21592 G				
T1 1 T2 1	24.007525 G 24.219392 G				211.866859624 MHz
12 1	24.219392 G	nz - 2.75 u	BIII	1	03.04.2019

Date: 3.APR.2019 09:33:51

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4.3 FIELD STRENGTH OF FUNDAMENTAL AND RADIATION SPURIOUS EMISSION

4.3.1 Test Limit

FCC according to §15.249(a).

(1) The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency (MHz)	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
2400-2483.5	50	500
5725-5875	50	500
24000-24250	250	2500

* Field strength limits are specified at a distance of 3 meters

Fundamental Limit Conversion						
Average	Average	Average	Peak			
(mV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)			
at 3M	at 3M	at 1M	at 1M			
250	107.9588	117.50	137.50			

*(Limit=107.9588+20LOG(3/1)=117.50 dBuV/m)

Harmonic Limit Conversion						
Average	Average	Average	Peak			
(uV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)			
at 3M	at 3M	at 1M	at 1M			
2500	67.9588	77.50	97.50			

*(Limit=67.9588+20LOG(3/1)=77.50 dBuV/m)



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(2) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209(follow the table), whichever is the lesser attenuation

Below 30 MHz

Frequency	Field Strength (μA/m)	Magnetic field strength (H-Field) (μA/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/F (F in kHz)	30
1.705-30 MHz	30	N/A	30

Above 30 MHz

Frequency	Field Strength microvolts/m at 3 metres (watts, e.i.r.p.)				
(MHz)	Transmitters	Receivers			
30-88	100 (3 nW)	100 (3 nW)			
88-216	150 (6.8 nW)	150 (6.8 nW)			
216-960	200 (12 nW)	200 (12 nW)			
Above 960	500 (75 nW)	500 (75 nW)			



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IC according to RSS-Gen, Section 8.9 and 8.10.

<u>RSS-Gen Table 3 and Table 5 – General Field Strength Limits for Transmitters and</u> <u>Receivers at Frequencies Above 30 MHz</u> (Note)

Frequency	Field Stre microvolts/m at 3 metr	•
(MHz)	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

Note: Measurements for compliance with the limits in table 3 may be performed at distances other than 3 metres, in accordance with Section 6.6.

RSS-Gen Table 6: General Field Strength Limits for Transmitters at Frequencies Below 30 MHz (Transmit)

Frequency	Magnetic field strength (H-Field) (µA/m)	Measurement Distance (m)
9-490 kHz ^{Note}	6.37/F (F in kHz)	300
490-1,705 kHz	63.7/F (F in kHz)	30
1.705-30 MHz	0.08	30

Note: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector..



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4.3.2 Test Procedure

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m, below 1 GHz and above 40G is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10: 2013, and the EUT set in a continuous mode.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.

- 3. The measurement distance above 40 GHz is set 1m away from the receiving antenna.
- 4. The SA setting following :
 - (1) Below 1G : RBW = 100kHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak,

(2) Above 1G:

(2.1) For Peak measurement : RBW = 1MHz, VBW \geq 3 RBW.

(2.2) For Average measurement : RBW = 1MHz, VBW = 10Hz.

For measurements above 40 GHz, every attempt shall be made to reduce contributions from reflections to a minimum. Measurements in the frequency range above 40 GHz are typically made at a closer distance because the instrumentation noise floor is typically close to the radiated emission limit. Use of waveguide and flexible waveguide might be necessary at frequencies above 40 GHz to achieve usable signal-to-noise ratios at required measurement distances. The corrected system noise floor level is 6 dB or more below the limit, then the validated maximum measurement distance is the distance specified by the limit.

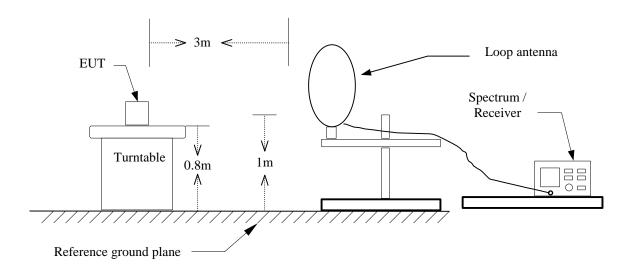
This devices that cause emissions above 10 GHz are physically small compared with the beamwidths of typical horn antennas used for EMC measurements. For such EUTs and frequencies above 40 GHz,, it might be preferable to vary the height and polarization of the EUT, instead of the receiving antenna, to maximize the measured emissions.



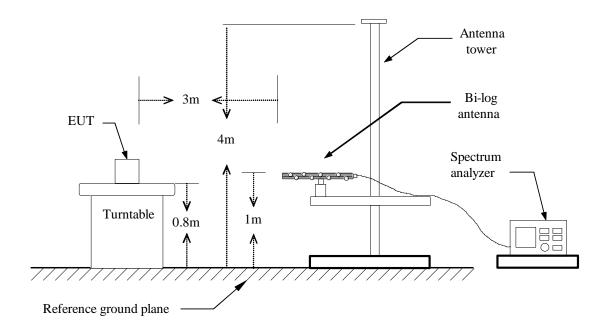
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4.3.3 Test Setup

<u>9kHz ~ 30MHz</u>



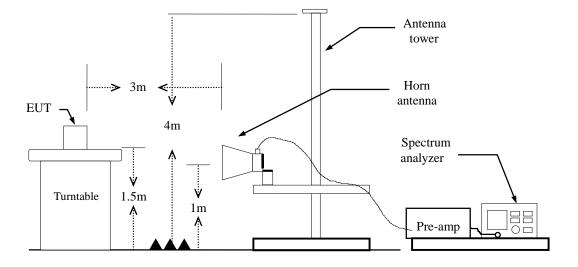




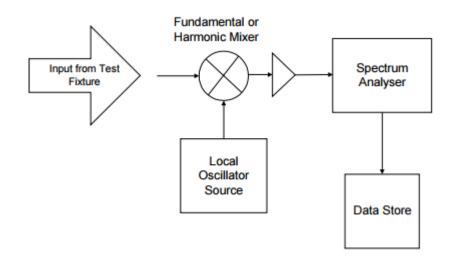


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Above 1 GHz



Above 40 GHz





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4.3.4 Test Result

Freq. (GHz)	Peak Value (dBuV/m)	Average Value (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result	Antenna Polarization (V/H)
24107.50	96.87	81.69	128.00	108.00	Pass	Н
24195.00	94.78	69.78	128.00	108.00	Pass	V

Test Data

(1) Filed strength of fundamental :

Test Mode:		X-24GHz	Temp/ł		23(°C)/ 66%R⊦
Test Item	Fu	ndamental	Test D	Date N	March 06, 2019
Axis		K-Plane	Test Eng	gineer	Dally Hong
Detector	Peal	<pre>& Average</pre>	Horizo	ontal	
180 Level (dBuV/n	1)				·
170			· · · · · · · · · · · · · · · · · · ·	 	
150				 	
100					
130				**************************************	
110				, , ,	
		1			
90	· · · · · · · · · · · · · · · · · · ·		 	i I	
				1 I 1 I 1 I	
70				 	
				1 I 1 I 1 I	
50		· · · · · · · · · · · · · · · · · · ·	1		1
30			1	 	1
10					
0 24000	24050.	24100.	24150.	24200.	24250
24000	24000.	Z4100. Frequen		24200.	24230
		requen	, (

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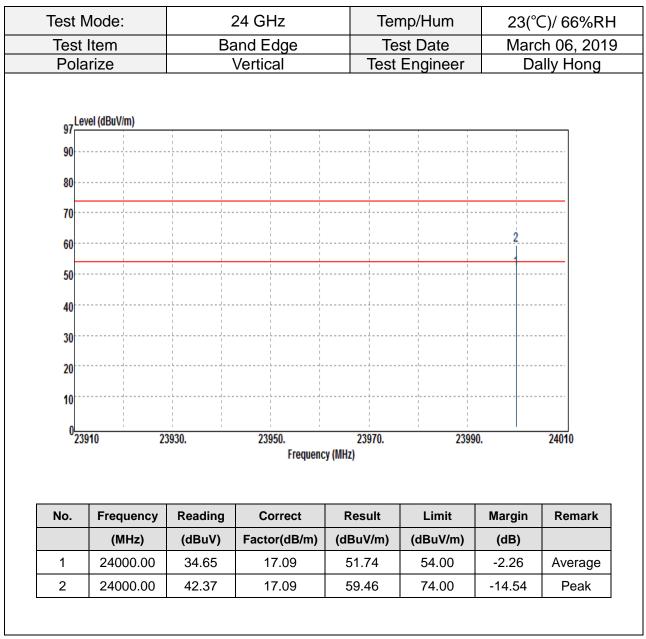


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Test Mode:		X-24GHz		/Hum	23(°C)/ 66%R
Test Item Polarize		ndamental Vertical		Date	March 06, 20 ² Dally Hong
Detector		k & Average	Vert	ngineer	
Delector	Fea	A Welaye	Ven	icai	
180	/m)				
180					
110					
150	 			· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
130				· · · · · · · · · · · · · · · · · · ·	
110	,			· · · · · · · · · · · · · · · · · · ·	
				1	
90		iii	· · · · · · · · · · · · · · · · · · ·		
70			,	2	
<mark>50</mark>	 				
20					
30			 	 	
10		· · · · · · · · · · · · · · · · · · ·	 		
0 24000	24050.	24100.	24150.	24200.	24250
21000	24000	Frequen		272001	LTLUU



(2) Band Edge Test Data





	Mode:		24 GHz	Ter	np/Hum	23(°0	C)/ 66%RI	
	Item		and Edge		st Date	March 06, 2019		
Pola	arize	Н	orizontal	Test	Engineer	Da	ally Hong	
97 Le	vel (dBuV/m)							
90								
80				 				
70					 			
						2		
60	J	- L			· · · · · · · · · · · · · · · · · · ·			
50				 				
40								
30								
20	 			 				
10				 				
0								
23	910 23	3930.	23950. Frequenc	23970. v (MHz)	2399	0.	24010	
			Trequenc	y (mn2)				
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark	
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)		
1	24000.00	34.62	17.09	51.71	54.00	-2.29	Average	
2	24000.00	43.80	17.09	60.89	74.00	-13.11	Peak	
	1		L		1		1	



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(3) Below 1G:

Test Mode:		TX-24GHz		Te	emp/Hum	23(°C)/	/ 66%RH
Test Item	3	80MHz-1GH	z		est Date		06, 2019
Polarize		Vertical		Tes	t Engineer	Dally	/ Hong
Detector	Pea	k and Qusi-j	peak				
97	//m)						
90			1	1		1	
80			· · · · · · · · · · · · · · · · · · ·				
70	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·		
60			· · · · · · · · · · · · · · · · · · ·			·	
50		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·		
40	· · · · · · · · · · · · · · · · · · ·				· · · · · · · · · · · · · · · · · · ·		
						6	
30	JL	3	4	5			
20	2'				 		
10	i i i						
030	224.	418.		612.	806	•	1000
			Frequency (MHz)			
		Correct					
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/r		Limit (dBuV/m)	Margin (dB)	Remarl
59.10	35.34	-15.36	19.98	;	40.00	-20.02	Peak
	26.65	-8.25	18.40)	43.50	-25.10	Peak
122.15	20.05					00.00	Peak
122.15 424.79	27.19	-4.09	23.10)	46.00	-22.90	r ear
		-4.09 -1.31	23.10 24.50		46.00	-22.90	Peak
424.79	27.19)			



Test Mode:		TX-24GHz			mp/Hum	、 <i>,</i>	/ 66%RH
Test Item	3	BOMHz-1GH	z		est Date		06, 2019
Polarize	Date	Horizontal		Test	t Engineer	Dally	y Hong
Detector	Pea	k and Qusi-	реак				
97	//m)						
90							
80		· · · · · · · · · · · · · · · · · · ·		 I I			
70	J						
60	· 						
50							
40						6	
30		3	4	5-			
20	1 2						
10							
0 <u></u> 30	224.	418.		612.	80	6.	1000
			Frequency (M	HZ)			
Frequency	Reading	Correct	Resu	ılt	Limit	Margin	
(MHz)	(dBuV)	Factor (dB/m)	(dBuV		(dBuV/m)	(dB)	Remarl
120.21	27.18	-8.33	18.8	35	43.50	-24.65	Peak
173.56	31.09	-10.36	20.7	73	43.50	-22.77	Peak
287.05	31.58	-7.70	23.8	38	46.00	-22.12	Peak
500.45	26.36	-2.10	24.2	26	46.00	-21.74	Peak
		0.92	27.5	59	46.00	-18.41	Peak
634.31	26.67	0.92					



(4) Above 1G :

Test Mode:		TX-24GHz	Te	emp/Hum	23(°∁)/	/ 66%RH	
Test Item	1	GHz-40GH	z T	est Date	March	06, 2019	
Polarize		Vertical	Tes	st Engineer	Dally Hong		
Detector	Pea	ak and Avera	age				
97 Level (dBuV/	m)						
90	 						
80							
00							
70	 						
60		· · · · · · · · · · · · · · · · · · ·					
						_	
50	······						
40	 	····			· · · · · · · · · · · · · · · · · · ·		
30							
20	 Januara ang kananana. I I	·····			 	. = = •	
10	, , , ,		· · · · · · · · · · · · · · · · · · ·		, , , , ,		
10							
01000	8800.	16600.	24400.	. 32200). 4	10000	
			Frequency (MHz)				
Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark	
(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)		
1595.00	52.94	-7.18	45.76	74.00	-28.24	Peak	
N/A							
			<u></u>				
						L	



Test Mode:		TX-24GHz	<u> </u>	Temp/Hum		/ 66%R⊦
Test Item		1GHz-40GF		Test Date		06, 2019
Polarize		Horizontal		est Engineer	Dall	y Hong
Detector	Pe	ak and Ave	rage			
97	//m)					
				i i		
90		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	·		
80		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·			
70						
60				· · · · · · · · · · · · · · · · · · ·	 	
50 1		· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·	 	
40			·····			
30	- J L I I I I I I			· · · · · · · · · · · · · · · · · · ·		
20	 	· · · · · · · · · · · · · · · · · · ·	I I I I I	· · · · · · · · · · · · · · · · · · ·	 	
10	i i i					
0 ¹ 1000	8800.	16600.	2440	0. 32200). 4	0000
			Frequency (MHz)			
Frequency	Reading	Correct	Result	Limit	Margin	
(MHz)	(dBuV)	Factor (dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Remark
1595.00	55.98	-7.18	48.80	74.00	-25.20	Peak
N/A						
mark:	•			-		
1. For ab	oove 1GHz, th compliance w	e EUT peak	value was und	ler average limi	t, therefore	the Avera



Test Mode:	TX-24GHz	Temp/Hum	23(°∁)/ 66%RH
Test Item	40GHz-50GHz	Test Date	March 06, 2019
Polarize	Vertical/Horizontal	Test Engineer	Dally Hong
Detector	Peak and Average		

IXU RL		RF 50 Ω	NFE	PNO: Fast ↔ IFGain:Low	SENSE:INT Trig: Free Run Atten: 10 dB	Avg Type: L Avg Hold: 1		07:29:08 PM Mar 06, 2019 TRACE 1 2 3 4 5 6 TYPE M WWWW DET P N N N N N	
10 dE Log r	3/div R i	ef 106.99	dBµV				N	1kr1 47.26 GHz 56.026 dBµV	Auto Tune
97.0									Center Freq 45.000000000 GHz
87.0 ·									Start Freq 40.000000000 GHz
67.0							▲ 1		Stop Freq 50.000000000 GHz
	Wantawayan	when the and	hy black and a second	re Algenia problema	munipul produced and a	www.marhawa.Mushawa	A Mangangua	with your all and a start with a start of the start of th	CF Step 1.00000000 GHz <u>Auto</u> Man
37.0									Freq Offset 0 Hz
17.0									Scale Type
	t 40.000 s BW 1.0			#VBW	3.0 MHz	S	weep 3	Stop 50.000 GHz 3.33 ms (1001 pts)	Log <u>Lin</u>
MSG							I STATUS		

Remark:

1. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Test Mode:	TX-24GHz	Temp/Hum Test Date	23(°C)/ 66%RH
Test Item	50GHz-75GHz		March 06, 2019
Polarize	Vertical/Horizontal	Test Engineer	Dally Hong
Detector	Peak and Average		
🔆 Agilent 17:18:0	5 Mar 6, 2019	RT	Freq/Channel
Ref 96.99 dB µ V	Ext Mix		Center Freq
#Peak Log			02.3000000 0H2
10 dB/			Start Freq 50.0000000 GHz
Lauren annele	hand and a server and a server a server a server	and a second a second of the second	Stop Freq 75.0000000 GHz
LgAv			CF Step 2.50000000 GHz <u>Auto</u> Man
M1 S2 S3 FC A AA			Freq Offset 0.00000000 Hz
£ (f): FTun #Swp			Signal Track On <u>Off</u>
Start 50.00 GHz		Stop 75.00 GH:	
#Res BW 1 MHz	₩VBW 3 MHz	Sweep 625 ms (601 pts)	
	2010 Agilent Technologie	<u>s</u>	

1. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Test Mode:	TX-24GHz Temp/Hum		23(℃)/ 66%Rŀ	
Test Item	75GHz-90GHz	Test Date	March 07, 2019	
Polarize	Vertical/Horizontal	Test Engineer	Dally Hong	
Detector	Peak and Average			
Keysight Spectrum Analyzer - Sw	ept SA CORREC SENSE:INT	ALIGN AUTO 02:50:32 PM Mar 07,	2019	
	NFE PNO: Fast +++ Trig: Free Run	Avg Type: Log-Pwr TRACE 1 2 3 AvglHold: 100/100 TYPE MWW	4 5 6 WWW	
10 dB/div Ref 96.99 0	IFGain:Low #Atten: 0 dB	DET P N N	Auto Tune	
			Center Freq	
87.0			82.500000000 GHz	
77.0			Start Freq	
67.0 white way on the strategies and		an in the second of the second	75.00000000 GHz	
57.0			Stop Freq	
47.0			90.00000000 GHz	
37.0			CF Step	
27.0			<u>Auto</u> Man	
17.0			Freq Offset	
6.99			0 Hz	
0.00			Scale Type	
Start 75.000 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz	Stop 90.000 (Sweep 10.00 ms (1001		
MSG File <picture.png< td=""><td></td><td></td><td>P10/</td></picture.png<>			P10/	

Remark:

1. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



MSG			Ko statu	IS		
Start 90.000 GHz #Res BW 1.0 MHz	#VBW	3.0 MHz	-	6.667 ms (10	00 GHz ^{Log} 01 pts)	
17.0					Scale Ty	
27.0					0	
57.0					Freq Offs	
47.0	dagerherererettigtettaterrertareretigte	กระส ^{อส} องกระหน่างกระสายสาย	al showed in the states	mannahlannahl	CF St 1.000000000 G <u>Auto</u> N	
57.0						
67.0					Stop Fr 100.00000000 G	
77.0					90.000000000	
87.0					Start Fr	
97.0					95.00000000 G	
10 dB/div Ref 106.	99 αθμν	ľ				
	IFGain:Low	#Atten: 0 dB		DET	Auto Tu	
KARL EXT MIXER	NFE PNO: Fast	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 100/100	03:39:53 PM M TRACE TYPE	ar 07, 2019 Frequency 2 3 4 5 6 Frequency 1 WWWWW P N N N N N	
🔤 Keysight Spectrum Analyzer -	Swept SA					
Detector	Peak and	d Average				
Polarize	Vertical/Horizontal		Test Eng	gineer	Dally Hong	
Test Item	90GHz-100GHz		Test D		March 07, 201	
Test Mode:	TX-24GHz		Temp/ł		23(℃)/ 66%RI	

1. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

--End of Report--