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Report No.: HK2411076586-E

# **FCC Test Report**

Test Report On Behalf of Dongguan Jiajin electronic technology Co., LTD For

Smart Ring

Model No.: SR08

FCC ID: 2BLZP-SR08

Prepared For:

Dongguan Jiajin electronic technology Co., LTD

No.8, Building D, Jinpeng Road, Jinfenghuang Industrial Zone, Fenggang Town, Dongguan City, China

Prepared By:

Shenzhen HUAK Testing Technology Co., Ltd. 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

 Date of Test:
 Nov. 07, 2024 ~ Nov. 13, 2024

 Date of Report:
 Nov. 13, 2024

 Report Number:
 HK2411076586-E

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Standards.

### **Test Result Certification**

Applicant's Name	: Dongguan Jiajin electronic technology Co., LTD
Address	No.8, Building D, Jinpeng Road, Jinfenghuang Industrial Zone, Fenggang Town, Dongguan City, China
Manufacturer's Name	: Dongguan Jiajin electronic technology Co., LTD
Address	No.8, Building D, Jinpeng Road, Jinfenghuang Industrial Zone, Fenggang Town, Dongguan City, China
Product Description	
Trade Mark	: N/A
Product Name	: Smart Ring
Model and/or Type Reference	: SR08
	47 CFR FCC Part 15 Subpart C 15 247

#### 47 CFR FCC Part 15 Subpart C 15.247 ..... KDB 558074 D01 15.247 Meas Guidance v05r02 ANSI C63.10: 2013

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Date of Test	
Date (s) of Performance of Tests	Nov. 07, 2024 ~ Nov. 13, 2024
Date of Issue	Nov. 13, 2024
Test Result	Pass

Testing Engineer

Len lian

Len Liao

**Technical Manager** 

Authorized Signatory

Sliver Wan

Mon

ason Mou

Jason Zhou

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Т 691

### \*\* Modified History \*\*

Revision		Description	I	ssued Data	Remark
Revision 1.0		Initial Test Report Release	N	lov. 13, 2024	Jason Zhou
KTESTING	KTEST	AK TESTING	W TESTING	NY TESTIN	AK TESTING
HOM	AD HUM	O HOME	HOM	Hor	A HOM

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# 1 Test Summary

# 1.1 Test Description

STEST	V TES.	V TEST
Test Item	Test Require	ement Result
Antenna Requirement	§15.203/§15.2	247(b)(4) PASS
Conducted Emission	FCC Part 1	5.207 PASS
Radiated Emissions	FCC Part 15.20	5/15.209 PASS
Maximum Peak Output Po	wer FCC Part 15.	.247(b) PASS
Power Spectral Density	FCC Part 15.	.247(e) PASS
6dB Bandwidth & 99% Band	width FCC Part 15.2	247(a)(2) PASS
Spurious RF Conducted Emi	ssion FCC Part 15.	247(d) PASS
Band Edge	FCC Part 15.	247(d) PASS

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### 1.2 Measurement Uncertainty

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

No.	Item	Uncertainty	
1 Conducted Emission Test		±2.71dB	
2 All emissions, radiated(<1G)		±3.90dB	
3	All emissions, radiated(>1G)	±4.28dB	

### **1.3 Information of the Test Laboratory**

Shenzhen HUAK Testing Technology Co., Ltd. Add.: 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Testing Laboratory Authorization:

A2LA Accreditation Code is 4781.01. FCC Designation Number is CN1229. Canada IC CAB identifier is CN0045. CNAS Registration Number is L9589.

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# 2 General Information

### 2.1 General Description of EUT

EUT Name:	Smart Ring	- UUAK TEST	- WAKT
Model No:	SR08	0	0
Series Model:	N/A	TESTING	
Model Difference:	N/A	O HUAN	KTESTING
Trade Mark:	N/A	0	HOM
Operation Frequency:	2402 MHz to 2480 MHz	AK TESTING	
Channel Separation:	2MHz	TING	45
Number of Channel:	40	HUAKTE	HUAK
Modulation Technology:	GFSK		I A A A A A A A A A A A A A A A A A A A
Hardware Version:	V1.0		
Software Version:	V1.0	TESTING	
Antenna Type:	PCB Antenna	O HUAT	C HUAN
Antenna Gain:	-1.87dBi	BING	
Power Supply:	DC5V from USB or DC3.7V from b	pattery	TING
Note:	O	0	JUAK TES

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2. Antenna gain Refer to the antenna specifications.

3. The cable loss data is obtained from the supplier.

4. The test results in the report only apply to the tested sample.

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olG	TING HUAN	Description o	f Channel	JAK	NG TING
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	14	2430	28	2458
5001	2404	15	2432	29	2460
2	2406	16	2434	30	2462
3	2408	17	2436	31	2464
4	2410	18	2438	32	2466
5 HUAK T	2412	19	2440	33	2468
6 6	2414	20	2442	34	2470
7	2416	21	2444	35	2472
8	2418	22	2446	36	2474
9	2420	23	2448	37	2476
10	2422	24	2450	38	2478
15111	2424	25	2452	39	2480
12	2426	26	2454		C HONO
13	2428	27	2456		

The EUT has been operated in modulations: GFSK independently.

No	Э.	Test Mode Description	on	
TEST	G	Low channel TX	TESTING	KTESTING O
2	0 HOM	Middle channel TX	O HUAN O	HOI
3	}	High channel TX		
Note:				

Note:

1. All the test modes can be supply by button battery, only the result of the worst case was recorded in the report if no any records.

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

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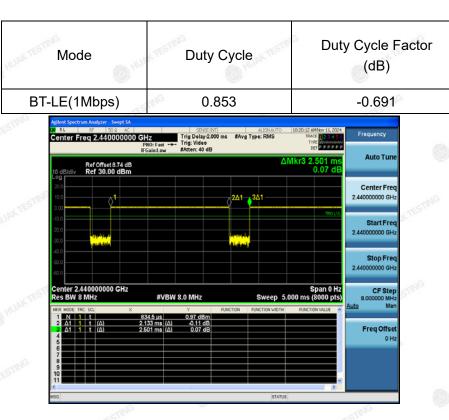


## 2.2 Description of Test Conditions

(1) E.U.T. test conditions:

For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

- (2) Frequency range of radiated measurements:The test range will be up to the tenth harmonic of the highest fundamental frequency.
- (3) Pre-test the EUT in all transmitting mode at the lowest (2402 MHz), middle (2440 MHz) and highest (2480 MHz) channel with different data packet and conducted to determine the worst-case mode, only the worst-case results are recorded in this report.



(4) Mode Test Duty Cycle

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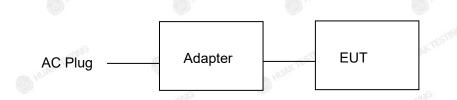
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### 2.3 Description of Test Setup

Operation of EUT during conducted testing and below 1GHz radiation testing:



Operation of EUT during above1GHz radiation testing:

EUT

The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. The worst case is X position.

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### 2.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Trade Mark	Model/Type No.	Specification	Note
1	Smart Ring	N/A	SR08	N/A	EUT
2	USB Cable	N/A	N/A	Length: 30cm	Peripheral
3	Adapter	N/A	MDY-10-EH	Input: AC100-240V, 50/60Hz, 0.7A Output: DC5V/3A, 9V/3A, 12V/2.25A, 20V/1.35A	Peripheral
4	Adapter	N/A	N/A	Input: AC100-240V, 50/60Hz, 0.75A Output: DC5V/2A, 9V/2A, 10V/2.25A MAX	Peripheral
HUAKTES	HUAKTEST	HUAKTES	HUAKTESS	HUAKTES	HUAKTES

#### Note:

- 1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test
- 2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
- 3. For conducted measurements (Output Power, 6dB Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.

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# 3 Equipments List for All Test Items

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interva
1.	L.I.S.N.	R&S	ENV216	HKE-002	2024/02/20	1 Year
2	L.I.S.N.	R&S	ENV216	HKE-059	2024/02/20	1 Year
3	EMI Test Receiver	R&S	ESR	HKE-005	2024/02/20	1 Year
4	Spectrum analyzer	Agilent	N9020A	HKE-025	2024/02/20	1 Year
5	Spectrum analyzer	R&S	FSV3044	HKE-126	2024/02/20	1 Year
6	Preamplifier	EMCI	EMC05184 5S	HKE-006	2024/02/20	1 Year
7	Preamplifier	Schwarzbeck	BBV 9743	HKE-016	2024/02/20	1 Year
8	Preamplifier	A.H. Systems	SAS-574	HKE-182	2024/02/20	1 Year
9	6dB Attenuator	Pasternack	6db	HKE-184	2024/02/20	1 Year
10	EMI Test Receiver	Rohde & Schwarz	ESR-7	HKE-010	2024/02/20	1 Year
11	Broadband Antenna	Schwarzbeck	VULB9168	HKE-167	2024/02/21	2 Year
12	Loop Antenna	COM-POWER	AL-130R	HKE-014	2024/02/21	2 Year
13	Horn Antenna	Schwarzbeck	9120D	HKE-013	2024/02/21	2 Year
14	EMI Test Software	Tonscend	JS32-CE 2.5.0.6	HKE-081	AUAK TEST	/
15	EMI Test Software	Tonscend	JS32-RE 5.0.0	HKE-082	1	/
16	RF Automatic control unit	Tonscend	JS0806-2	HKE-060	2024/02/20	1 Year
17	High pass filter unit	Tonscend	JS0806-F	HKE-055	2024/02/20	1 Year
18	Wireless Communication Test Set	R&S	CMU200	HKE-026	2024/02/20	1 Year
19	Wireless Communication Test Set	R&S	CMW500	HKE-027	2024/02/20	1 Year
20	High-low temperature chamber	Guangke	HT-80L	HKE-118	2024/06/10	1 Year
21	Temperature and humidity meter	Boyang	HTC-1	HKE-075	2024/06/10	1 Year
22	RF Test Software	Tonscend	JS1120-3 Version 3.3.23	HKE-083	I man	/
23	10dB Attenuator	Schwarzbeck	VTSD9561F	HKE-153	2024/02/20	1 Year
24	RSE Test Software	Tonscend	JS36-RSE 5.0.0	HKE-184	/ () <sup>401</sup>	/

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### 4 Test Result

### 4.1 Antenna Requirement

### 4.1.1 Standard Requirement

#### **Standard Applicable**

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247, if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

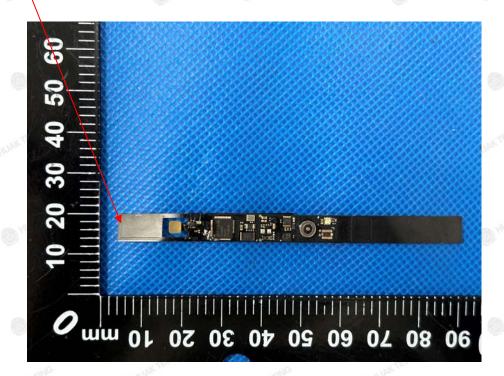
#### Refer to statement below for compliance.

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

#### **Antenna Connected Construction**

The antenna used in this product is a PCB Antenna, is a permanently attached antenna on the PCB. It conforms to the standard requirements. The directional gains of antenna used for transmitting is -1.87dBi.

#### 4.1.2 EUT Antenna



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### 4.2 Conduction Emissions Measurement

### 4.2.1 Applied Procedures / Limit

According to FCC CFR Title 47 Part 15 Subpart C Section 15.207, AC Power Line Conducted Emissions Limits for Licence-Exempt Radio Apparatus as below:

G		Limit (dBuV)				
ALTESTIN	Frequency range (MHz)	Quasi-peak	Average			
	0.15-0.5	66 to 56*	56 to 46*			
240	0.5-5	56	46			
	5-30	60 60	50 50 m			

\* Decreases with the logarithm of the frequency.

### 4.2.2 Test Procedure

- 1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10:2013.
- 2. Support equipment, if needed, was placed as per ANSI C63.10:2013.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10:2013.
- 4. The adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5. All support equipments received AC power from a second LISN, if any.
- 6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.

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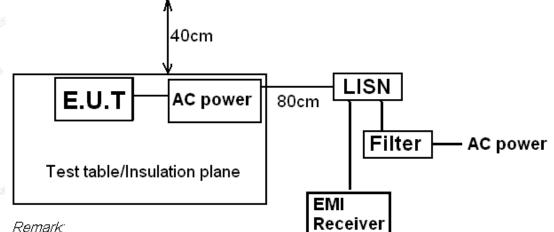


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### 4.2.3 Test Setup

**Reference Plane** 



Remark: E.U.T: Equipment Under Test LISN: Line Impedence Stabilization Network Test table height=0.8m

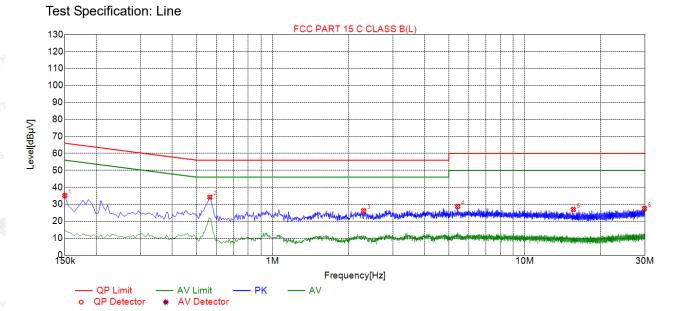
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### 4.2.4 Test Results

All modes have been tested, only the worst result was reported as below:



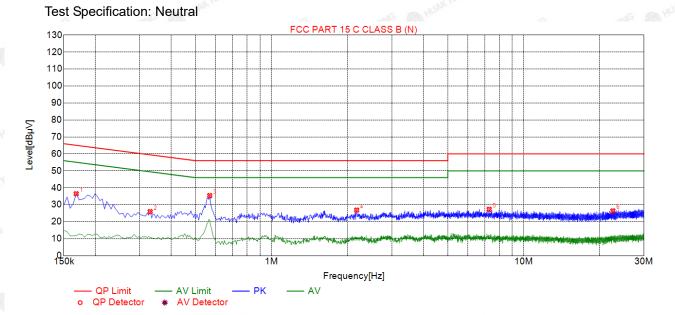
Sus	spected	l List						
NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Туре
1	0.1500	35.13	19.83	66.00	30.87	15.30	PK	L
2	0.5640	34.17	19.86	56.00	21.83	14.31	PK	L
3	2.2965	26.18	20.00	56.00	29.82	6.18	PK	L
4	5.4195	28.71	20.11	60.00	31.29	8.60	PK	L
5	15.5895	26.93	19.81	60.00	33.07	7.12	PK	L
6	29.8365	27.50	20.26	60.00	32.50	7.24	PK	L

Remark: Margin = Limit – Level Correction factor = Cable lose + LISN insertion loss Level=Test receiver reading + correction factor

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Sus	Suspected List												
NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Туре					
1	0.1680	36.51	19.71	65.06	28.55	16.80	PK	N					
2	0.3300	25.97	19.74	59.45	33.48	6.23	PK	N					
3	0.5685	35.40	19.74	56.00	20.60	15.66	PK	N					
4	2.1750	26.87	19.86	56.00	29.13	7.01	PK	N					
5	7.2960	27.34	19.95	60.00	32.66	7.39	PK	N					
6	22.5735	26.42	20.11	60.00	33.58	6.31	PK	N					

Remark: Margin = Limit – Level

Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor

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### 4.3 Radiated Emissions Measurement

### 4.3.1 Applied Procedures / Limit

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission out of authorized band shall not exceed the following table at a 3 meters measurement distance. In addition, radiated 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).

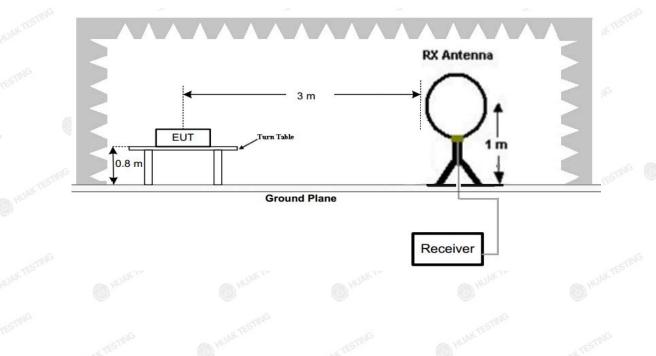
Except when the requirements applicable to a given device state otherwise, emissions from license-exempt transmitters shall comply with the field strength limits shown in table below. Additionally, the level of any transmitter emission shall not exceed the level of the transmitter's fundamental emission.

Rad	liated emission limits	
Distance (Meters)	Radiated (dBµV/m)	Radiated (µV/m)
3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
3	20log(30)+ 40log(30/3)	30
3	40.0	100
3 TESTING	43.5	150
3	46.0	200
3	54.0	500
	Distance (Meters) 3 3 3 3 3 3 3	3       20log(2400/F(KHz))+40log(300/3)         3       20log(24000/F(KHz))+40log(30/3)         3       20log(24000/F(KHz))+40log(30/3)         3       20log(30)+40log(30/3)         3       40.0         3       43.5         3       46.0

### 4.3.2 Test Setup

#### **Test Configuration:**

1) 9 kHz to 30 MHz emissions:

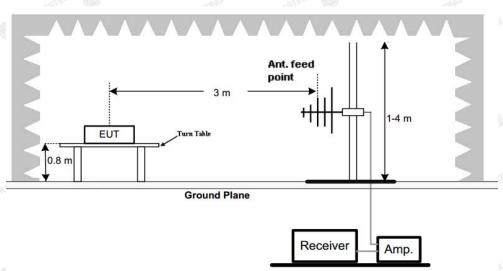


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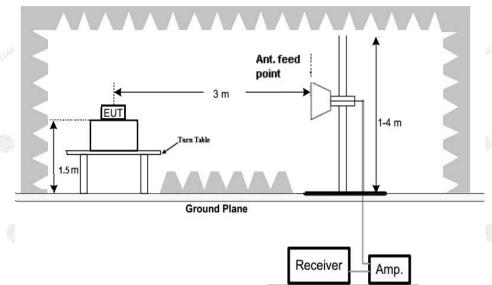
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2) 30 MHz to 1 GHz emissions:



3) 1 GHz to 25 GHz emissions:



### Test Procedure

- 1. The EUT was placed on turn table which is 0.8m above ground plane for below 1GHz test, and on a low permittivity and low loss tangent turn table which is 1.5m above ground plane for above 1GHz test.
- 2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0 degrees to 360 degrees to acquire the highest emissions from EUT.
- And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
  - 4. Repeat above procedures until all frequency measurements have been completed.

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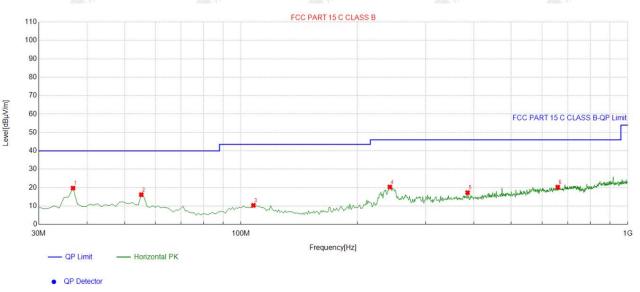
HST FIF

#### 4.3.3 Test Result

#### Below 1GHz Test Results:

All modes have been tested, only the worst mode of GFSK Low channel TX is reflected.

#### Antenna polarity: H



#### Suspected List

1		Freq.	Factor	Reading	Level	Limit	Margin	Height	Angle	
	NO.	[MHz]	[dB]	[dBµV/m]	[dBµV/m]	[dBµV/m]	[dB]	[cm]	[°]	Polarity
Į	1	36.796797	-14.57	34.30	19.73	40.00	20.27	100	195	Horizontal
	2	55.245245	-14.00	30.17	16.17	40.00	23.83	100	356	Horizontal
	3	107.67767	-14.18	24.54	10.36	43.50	33.14	100	73	Horizontal
	4	242.64264	-13.42	33.75	20.33	46.00	25.67	100	184	Horizontal
ş	5	385.37537	-9.07	26.35	17.28	46.00	28.72	100	1	Horizontal
	6	659.18918	-4.80	25.06	20.26	46.00	25.74	100	318	Horizontal

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level;

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#### Suspected List

3		Freq.	Factor	Reading	Level	Limit	Margin	Height	Angle		
	NO.	[MHz]	[dB]	[dBµV/m]	[dBµV/m]	[dBµV/m]	[dB]	[cm]	[°]	Polarity	
	1	47.477477	-13.86	24.83	10.97	40.00	29.03	100	82	Vertical	
	2	64.954955	-15.33	28.04	12.71	40.00	27.29	100	54	Vertical	
3	3	119.32932	-15.94	27.15	11.21	43.50	32.29	100	358	Vertical	
	4	173.70370	-16.83	28.23	11.40	43.50	32.10	100	126	Vertical	
	5	242.64264	-13.42	27.56	14.14	46.00	31.86	100	76	Vertical	
	6	481.50150	-8.18	31.57	23.39	46.00	22.61	100	288	Vertical	

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level;

#### **Harmonics and Spurious Emissions**

#### Frequency Range (9kHz-30MHz)

G	Frequency (N	IHz)	Level@3m (dBµV/m)	Lir	mit@3m (dBµ∖	//m)
	TESTING-	HUAK	TESTING	HUAK	-	TING
	HUAN		HUAN	1999 - Carlos	HUAN	
ſ		CSTING		resting	-	
Ī	and The	HUAK		HUAN		ang a

**Note:** 1. Emission Level=Reading+ Cable loss+ Antenna factor-Amp factor.

2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement.

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#### For 1GHz to 25GHz

### CH Low (2402MHz)

#### Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4804.00	55.25	-3.65	51.60	74.00	-22.40	peak
4804.00	45.49	-3.65	41.84	54.00	-12.16	AVG
7206.00	54.61	-0.95	53.66	74.00	-20.34	peak
7206.00	42.75	-0.95	41.80	54.00	-12.20	AVG

#### Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	C HUAK T
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
4804.00	57.11	-3.65	53.46	74.00	-20.54	peak
4804.00	46.51	-3.65	42.86	54.00	-11.14	AVG
7206.00	51.89	-0.95	50.94	74.00	-23.06	peak
7206.00	44.15	-0.95	43.20	54.00	-10.80	AVG

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CH Middle (2440MHz)

#### Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
4880.00	55.58	-3.54	52.04	74.00	-21.96	peak
4880.00	46.39	-3.54	42.85	54.00	-11.15	AVG
7320.00	51.33	-0.81	50.52	74.00	-23.48	peak
7320.00	42.20	-0.81	41.39	54.00	-12.61	AVG

#### Vertical:

Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
55.02	-3.54	51.48	74.00	-22.52	peak
45.74	-3.54	42.20	54.00	-11.80	AVG
52.03	-0.81	51.22	74.00	-22.78	peak
41.72	-0.81	40.91	54.00	-13.09	AVG
	Reading (dBμV) 55.02 45.74 52.03	Reading         Factor           (dBµV)         (dB)           55.02         -3.54           45.74         -3.54           52.03         -0.81	Reading         Factor         Emission Level           (dBµV)         (dB)         (dBµV/m)           55.02         -3.54         51.48           45.74         -3.54         42.20           52.03         -0.81         51.22	Reading         Factor         Emission Level         Limits           (dBµV)         (dB)         (dBµV/m)         (dBµV/m)           55.02         -3.54         51.48         74.00           45.74         -3.54         42.20         54.00           52.03         -0.81         51.22         74.00	Reading         Factor         Emission Level         Limits         Margin           (dBµV)         (dB)         (dBµV/m)         (dBµV/m)         (dB)           55.02         -3.54         51.48         74.00         -22.52           45.74         -3.54         42.20         54.00         -11.80           52.03         -0.81         51.22         74.00         -22.78

Margin = Level-Limit.

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CH High (2480MHz)

#### Horizontal:

	Reading				Margin	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
4960.00	56.51	-3.43	53.08	74.00	-20.92	peak
4960.00	43.97	-3.44	40.53	54.00	-13.47	AVG
7440.00	51.23	-0.77	50.46	74.00	-23.54	peak
7440.00	43.59	-0.77	42.82	54.00	-11.18	AVG

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
4960.00	54.58	-3.43	51.15	74.00	-22.85	peak
4960.00	44.02	-3.44	40.58	54.00	-13.42	AVG
7440.00	53.72	-0.77	52.95	74.00	-21.05	peak
7440.00	41.76	-0.77	40.99	54.00	-13.01	AVG

Margin = Level-Limit.

#### Remark:

(1) Measuring frequencies from 1 GHz to the 25 GHz.

(2) "F" denotes fundamental frequency; "H" denotes spurious frequency; "E" denotes band edge frequency.

(3) \* denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.

(4) The emissions are attenuated more than 20dB below the permissible limits are not recorded in the report. (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.

(6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.</p>
(7) All modes of operation were investigated and the worst-case emissions are reported.

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Radiated Band Edge Test:

Operation Mode: TX CH Low (2402MHz)

Horizontal (Worst case):

Frequency	Reading Result	Factor	Emission Level	ission Level Limits		Detector	
₀₀ (MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре	
2310.00	56.34	-5.81	50.53	74	-23.47	peak	
2310.00	/	-5.81	O HO	54	1 🔘 🕅	AVG	
2390.00	55.19	-5.84	49.35	74	-24.65	peak	
2390.00	HUAK TES I	-5.84	HUNK TEST	54	JUAN TETT	AVG	
2400.00	55.01	-5.84	49.17	74	-24.83	peak	
2400.00	/	-5.84	1	54	/	AVG	

0

Margin = Level-Limit.

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2310.00	52.87	-5.81	47.06	74	-26.94	peak
2310.00	1	-5.81	7	54	1	AVG
2390.00	52.88	-5.84	47.04	74	-26.96	peak
2390.00	HUAKTEST	-5.84	HUAN TES	54	JAK TESTIN /	AVG
2400.00	54.01	-5.84	48.17	74	-25.83	peak
2400.00	TING	-5.84	1	54	5 <sup>5</sup> 1	AVG

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Operation Mode: TX CH High (2480MHz)

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2483.50	53.24	-5.81	47.43	74	-26.57	peak
2483.50	I I	-5.81	1	54	ESTIME /	AVG
2500.00	51.44	-6.06	45.38	74	-28.62	peak
2500.00	1	-6.06	1	54 sm <sup>6</sup>	1	AVG

Horizontal (Worst case)

Vertical:

Frequency	Frequency Meter Reading (MHz) (dBµV)		Emission Level	ja Limits	Margin	Detector
(MHz)			(dBµV/m)	dBμV/m) (dBμV/m)		Туре
2483.50	2483.50 50.75		44.94	74	-29.06	peak
2483.50	TESTANO /	-5.81	I AK TESTING	54	/	AVG
2500.00	51.61	-6.06	45.55	74	-28.45	peak
2500.00	1.	-6.06	/	54	/	AVG

Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limit.

Remark:

1. If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

2. In restricted bands of operation, the spurious emissions below the permissible value more than 20dB.

3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

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### 4.4 Maximum Output Power Measurement

### 4.4.1 Limit

The Maximum Peak Output Power Measurement is 30dBm.

### 4.4.2 Test Procedure

The maximum peak conducted output power may be measured using a broadband peak RF automatic control unit. The RF automatic control unit shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

The maximum Average conducted output power may be measured using a wideband RF automatic control unit with a thermocouple detector or equivalent. The RF automatic control unit shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

### 4.4.3 Deviation from Standard

No deviation.

### 4.4.4 Test Setup



RF automatic control unit

EUT

### 4.4.5 Test Results

Channel	Channel Frequency (Mhz)	Maximum Peak Conducted Output Power (dBm)	Limit (dBm)	Result
Low	2402	-1.74	C HUAK IL	Pass
Middle	2440	-1.46	30.00	Pass
High	2480	-1.06	TESTING	Pass

Note: The test results including the cable loss.

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### 4.5 Power Spectral Density

### 4.5.1 Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

### 4.5.2 Test Procedure

Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.

Set the RBW =10 kHz. Set the VBW =30 kHz.

Set the span to 1.5 times the DTS channel bandwidth.

Detector = peak.

Sweep time = auto couple.

Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum power level. If measured value exceeds limit, reduce RBW(no less than 3 kHz)and repeat. The resulting peak PSD level must be 8 dBm.

### 4.5.3 Deviation from Standard

No deviation.





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### 4.5.5 Test Results

	ASIA HILL	915733	150	A 100 (150)					
Channel	Channel frequency (MHz)	Result (dBm/10kHz)	10log (3/10)	Test Result (dBm/3kHz)					
Low	2402	-12.21	-5.23	-17.44					
Middle	2440	-11.75	-5.23	-16.98					
High	2480	-11.48	-5.23	-16.71					
Limit : 8dBm/3	Limit : 8dBm/3KHz								
Test Result (df	Test Result (dBm/3kHz)= Result (dBm/10kHz)+10log (3/10)								
Test Result	TESTING	PA	SS						

CH 00



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TEICATION

CH 19



CH 39



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### 4.6 6dB Bandwidth

### 4.6.1 Limit

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

### 4.6.2 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW=100 KHz and VBW=300 KHz. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

- 1. Set RBW = 100 kHz.
- Set the video bandwidth (VBW) ≥ 3 RBW.
- 3. Detector = Peak.
- 4. Trace mode = max hold.
- 5. Sweep = auto couple.
- 6. Allow the trace to stabilize.

7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

### 4.6.3 Deviation from Standard

No deviation.

#### 4.6.4 Test Setup

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EUT		ANALYZER
	TING	TIN

### 4.6.5 Test Result

Channel	Channel frequency (MHz)	6dB Bandwidth (MHz)	Limit (KHz)	Result
Low	2402	0.724	NUAK TEST	Pass
Middle	2440	0.716	≥500	Pass
High	2480	0.732	O HOM	Pass

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#### CH 00



CH 19



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CH 39



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### 4.7 Occupied Bandwidth

### 4.7.1 Test Procedure

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

RBW=1% to 5% of the OBW

VBW=approximately 3 X RBW

Detector=Peak

Trace Mode: Max Hold

Use the 99% power bandwidth function of the instrument to measure the Occupied Bandwidth and recorded.

### 4.7.2 Deviation from Standard

No deviation.

### 4.7.3 Test Setup



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### 4.7.4 Test Result

N/A

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### 4.8 Band Edge

#### 4.8.1 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under FCC rules in section 5.8.1, the attenuation required shall be 30 dB instead of 20 dB.

#### 4.8.2 Test Procedure

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. Span = wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation, RBW ≥ 1% of the span, VBW ≥ RBW, Sweep = auto, Detector function = peak, Trace = max hold.

#### 4.8.3 Deviation from Standard

No deviation.

### 4.8.4 Test Setup

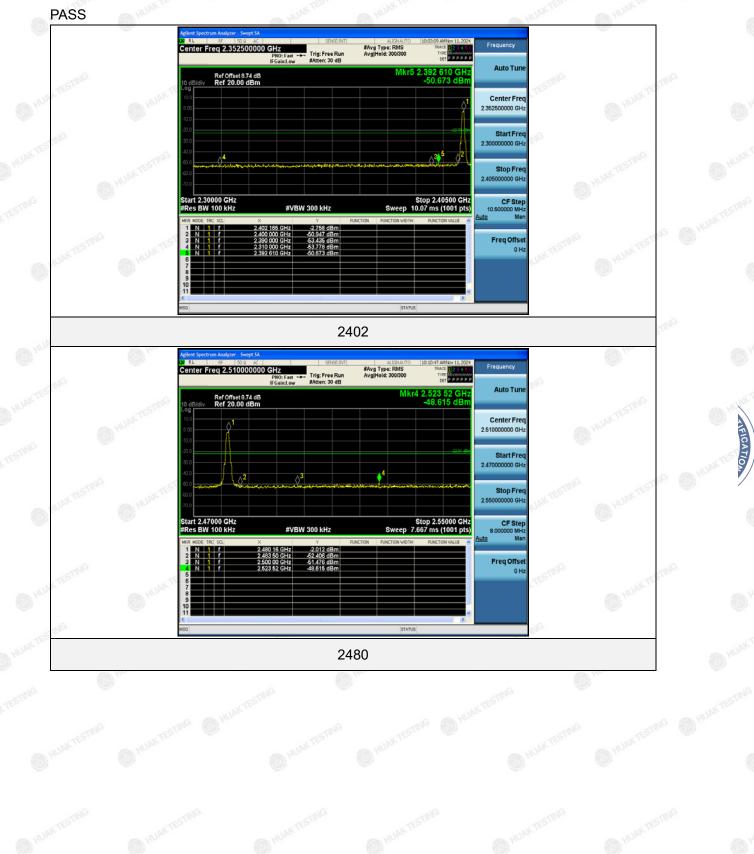


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### 4.8.5 Test Results



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### 4.9 Conducted Spurious Emissions

### 4.9.1 Applied Procedures / Limit

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In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section (b)(3) of RSS 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. For below 30MHz,For 9KHz-150kHz,150K-10MHz,We use the RBW 1KHz,10KHz, So the limit need to

calculated by "10lg(BW1/BW2)". for example For9KHz-150kHz,RBW 1KHz, The Limit= the highest emission level-20-10log(100/1)= the highest emission level-40.

#### 4.9.2 Test Procedure

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. Span = wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation, RBW ≥ 1% of the span, VBW ≥ RBW, Sweep = auto, Detector function = peak, Trace = max hold.

### 4.9.3 Deviation from Standard

No deviation.

### 4.9.4 Test Setup



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#### Report No.: HK2411076586-E

### 4.9.5 Test Results

0		011				<u> </u>
gilent Spectrum Analyzer - Swept RL RF 50 Q Center Freq 2.402000	AC 000 GHz	SENSE:INT	ALIGNA #Avg Type: RMS	S TRAI		Frequency
	PNO: Wide +++ IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Hold: 10/10	TYI D	PPPPPP	Auto Tune
Ref Offset 8.74 0 dB/div Ref 28.74 dE	dB im		N	lkr1 2.402 1 -2.9	83 GHz 25 dBm	Auto Tune
18.7						Center Freq 2.402000000 GHz
8.74						2.402000000 GHz
1.26		<b>1</b>				Start Freq 2.400500000 GHz
11.3	. M	mmuly				
13	میں		mar Mar			Stop Freq 2.403500000 GHz
	with		. 4			CF Step
H.3 MMM	v <sup>v</sup>		Le.	MMM		300.000 kHz Auto Man
, N				, M		Freq Offset
1.3 Mayor					MAJON	0 Hz
1.3						
enter 2.402000 GHz Res BW 100 kHz	#VBW	300 kHz	Swee	Span 3 p 1.000 ms (	.000 MHz 1001 pts)	
20				STATUS		
gilent Spectrum Analyzer - Swept RL RF 50 g	AC	SENSE:INT			4Nov 11, 2024	Frequency
Center Freq 515.0000	PNO: Fast	Trig: Free Run #Atten: 20 dB	#Avg Type: RM: Avg Hold: 10/10			
Ref Offset 8.74 dB/div Ref 18.74 dE	dB Sm			Mkr1 856. -60.7	89 MHz 67 dBm	Auto Tune
						Center Freq
74						515.000000 MHz
.26						Start Freq 30.000000 MHz
1.3						30.000000 MHz
1.3					22.97 40-	Stop Freq 1.00000000 GHz
1.3						
1.3						CF Step 97.000000 MHz Auto Man
1.3				1		
	المعاقل إرتادوهم وقارو		Anta linta dent	narada ha nan		Freq Offset 0 Hz
1.3 <b>1.1.6.00 - 6.00 (1.1.1) - 6.00</b>	adajilida e territadi e	y formation and a state of the	hannen samera an	a a dear dan di Kirpins	opia fi nicelani	
tart 30.0 MHz Res BW 100 kHz	#3/03//	300 kHz	Qureau	Stop 1.0 94.00 ms (3	0000 GHz	
6 TOO KH2	#4014	300 KH2		STATUS	ooon prsj	
gilent Spectrum Analyzer - Swept RL RF 50 Q	SA AC	SENSE:INT	ALI IGN A	UTO 10:03:55 A	INov 11, 2024	
enter Freq 13.75000	0000 GHz PNO: Fast IFGain:Low	Trig: Free Run #Atten: 20 dB	#Avg Type: RM Avg Hold: 10/10	S TRAI		Frequency
Ref Offset 8.74 dB/div Ref 18.74 dB			M	kr2 25.334		Auto Tune
og	sm			-40.4		Center Freq
.26 1 1.3						13.750000000 GHz
21.3					-22 93 <del>(B.</del>	Start Freq
41.3					<mark>2</mark>	1.000000000 GHz
51.3	-	العربين الماليس	alan yayahata	-	iin de ser	Stop Freq
1.3						26.50000000 GHz
tart 1.00 GHz Res BW 100 kHz	#VBW	300 kHz	Swe	Stop 2 ep 2.438 s (3	6.50 GHz 0001 pts)	CF Step 2.55000000 GHz
IXR MODE TRC SCL	× 2.401 65 GHz 25.334 65 GHz	Y FUI -3.692 dBm -48.451 dBm	ICTION FUNCTION	WIDTH FUNCTION	IN VALUE	<u>Auto</u> Man
2 N 1 F 3 4 5 5	25.554 65 GH2	46.451 dBM				Freq Offset 0 Hz
5 6 7 8						
9						
11 0			-	STATUS	>	

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### CH 19



Agilen	t Spectru	m Analyzer									_	
Cen	ter Fre	⊮⊧  s eq 515.0	0 R AC			ISE:INT	#Avg Type:		TRA	4Nov 11, 2024	Frequ	ency
				PNO: Fast ++ IFGain:Low	#Atten: 2		Avg Hold: 1	0/10	D	PPPPP		
10 dE Log i	3/div	Ref Offset Ref 18.7	8.74 dB 4 dBm					MI		39 MHz 40 dBm	Au	to Tune
8.74												ter Freq 1000 MHz
-1.26 -11.3												art Freq 1000 MHz
-21.3										-23.62 dBm		op Freq 0000 GHz
-41.3												CF Step 1000 MHz Man
-51.3 -61.3		ار داده ا	. انعاغست ،	فطعره ارجاد ولاد	la la la daded	Laure de vier		laithe an a	al antistad	1 PHONE IN		q Offset 0 Hz
-71.3	aj tinto	interingen		in the state of the	anglag Meris	angindu ki ki	, dan jing setan ada	ala (inita Mari	ond all an all of	idejumasilais		
	t 30.0 / s BW 1	MHz 100 kHz		#VBW	300 kHz		Sw	reep 94		0000 GHz 0001 pts)		
MSG								STATUS			_	

allant Coaste	um Analyzer - Sv	ment 54					
RL	RF 50 (		SENSE:INT	#Avg	ALIGNAUTO Type: RMS old: 10/10	10:07:32 AMNov 11, 2024 TRACE 2 3 4 5 0 TYPE	Frequency
	Ref Offset 8	IFGain:Low			Mkr2	24.726 90 GHz -48.796 dBm	Auto Tun
0 dB/div 99 8.74 1.26	Ref 18.74	dBm				-40.790 UDIII	Center Fre 13.750000000 GH
1.3 11.3 11.3						2	Start Fre 1.000000000 GH
51.3 51.3 11.3							Stop Fre 26.500000000 GH
	100 kHz		BW 300 kHz		<u> </u>	Stop 26.50 GHz 2.438 s (30001 pts)	CF Ste 2.55000000 GH Auto Ma
KR MODE TF 1 N 1 2 N 1 3 4 5 6	1	× 2.439 90 GHz 24.726 90 GHz	-3.495 dBm -48.796 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Freq Offse 0 H
7 8 9 10						>	
6					STATUS		

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### CH 39



Agilent Spectrum Analyzer - Swept SA				
Center Freq 515.000000 MH		ALIGNAUTO Type: RMS Iold: 10/10	10:10:59 AMNov 11, 2024 TRACE 1 2 3 4 5 6 TYPE	Frequency
	FGain:Low #Atten: 20		DETPPPPP	Auto Tune
Ref Offset 8.74 dB 10 dB/div Ref 18.74 dBm		Mł	r1 719.19 MHz -60.753 dBm	Auto Tune
8.74				Center Freq 515.000000 MHz
-1.26				Start Freq 30.000000 MHz
-21.3			011200	Stop Freq 1.00000000 GHz
41.3				CF Step 97.000000 MHz Auto Mar
-61.3		<b>↓</b> 1		Freq Offset
	terleri bar terleri bar elektrologi elektrologi A forten elektrologi elektrologi elektrologi elektrologi A forten elektrologi elektrologi elektrologi elektrologi		a na ang ang ang ang ang ang ang ang ang	0 Hz
Start 30.0 MHz #Res BW 100 kHz	#VBW 300 kHz	Sweep 94	Stop 1.0000 GHz .00 ms (30001 pts)	

		16 M.Y.			. C.M.		
Agilent Spectrum Analy	rzer - Swept SA						
RE RF	50 9 AC		SENSE		ALIGNAUTO	10:11:32 AMNov 11, 202	Frequency
Center Freq 13	3.750000000				g Type: RMS	TRACE 1 2 3 4 5	
		PNO: Fast	#Atten: 20 d		(Held: 10/10	DET P P P P P	-
		IFGain:Low	#Atten: 20 d	в			Auto Tuno
5.40	ffset 8.74 dB				Mkr2	25.268 35 GH	Auto Tune
	18.74 dBm					-49,606 dBn	
	18.74 UBIII		_				
8.74							Center Frea
-1.26 Y							13.750000000 GHz
-11.3							
						-22.42.45	
-21.3			+			-23.12.00	Start Freg
-31.3							1.00000000 GHz
							1.00000000 GHZ
-41.3						<u> </u>	
-61.3						the second second	
-61.3	. Industry and starting	و مذ بالدور بو		and the second second	A second second second	And the second	Stop Freq
-01.3	and the local division of the local division		a subscription of the				26.50000000 GHz
-71.3							20.00000000000
Start 1.00 GHz						Stop 26.50 GH	CF Step
						2.438 s (30001 pts	2.55000000 GHz
_							Auto Man
MKR MODE TRC SCL	×		Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	
1 N 1 f		9 85 GHz 3 35 GHz	-3.138 dBm -49.606 dBm	1			
3	25.268	35 GHZ	-49.606 dBm	<u>ا</u>			Freq Offset
4							
5							0 Hz
6							
7							
8							
10							
11							2
<						>	
MSG					STATUS	1	
m.v.					SIAIOS		

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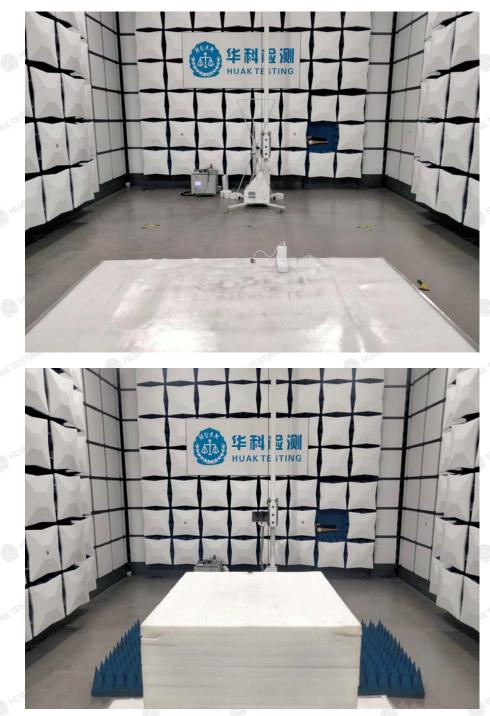
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# 5 Test Setup Photos

Radiated Emission



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### Report No.: HK2411076586-E

Contraction of the second

**Conducted Emission** 



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# 6 Photos of the EUT

Reference to the report: ANNEX A of external photos and ANNEX B of internal photos.

---End of test report-----

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