



### For MIMO antenna 1+antenna 2

## Configuration Band IV (5150 - 5250MHz)

Mode	Test channel	Power Density (dBm/MHz)	Limit (dBm/MHz)	Result
11n(HT20)	CH36	0.48	11 m/G	PASS
11n(HT20)	CH40	0.66	(a) 11	PASS
11n(HT20)	CH48	0.20	11	PASS
11n(HT40)	CH38	-2.05	MILITARY 11	PASS
11n(HT40)	CH46	-2.25	11 AUM TES	PASS
11ac(HT20)	CH36	0.73	11	PASS
11ac(HT20)	CH40	0.33	,s 11 <sub>(10)</sub>	PASS
11ac(HT20)	CH48	0.54	11	PASS
11ac(HT40)	CH38	-1.94	11,,,,,	PASS
11ac(HT40)	CH46	-2.46	11 mm 11	PASS
11ac(HT80)	CH42	-4.41		PASS

ote: 1. According to KDB 662911, Result power = 10log(10(ant1/10)+10(ant2/10))
2. Result unit: W, The end result is converted to units of dBm.

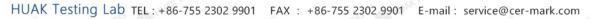
Note: This product supports antenna 3 and antenna 4 launch, but only support 802.11 n/ac for MIMO mode, ot support 802.11 a for MIMO mode.



# 4.6. BAND EDGE

# 4.6.1. Test Specification

Test Requirement:	FCC CFR47 Part 15E Section 15.407 & 15.209 & 15.205
Test Method:	ANSI C63.10 2013
Limit:	(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.  The limit of frequency below 1GHz and which fall in restricted bands should complies 15.209.
Test Setup:	Ground Reference Plans  Test Receives Taxon Contons
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.  2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.  3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.  4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.  5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.  6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasipeak or average method as specified and then reported in a data sheet.
Test Result:	PASS





## 4.6.2. Test Instruments

	Ra	diated Emissior	Test Site (966	5)	
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Receiver	R&S	ESRP3	HKE-005	Dec. 10, 2020	Dec. 09, 2021
Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 10, 2020	Dec. 09, 2021
Preamplifier	EMCI	EMC051845S E	HKE-015	Dec. 10, 2020	Dec. 09, 2021
Preamplifier	Agilent	83051A	HKE-016	Dec. 10, 2020	Dec. 09, 2021
Loop antenna	Schwarzbeck	FMZB 1519 B	HKE-014	Dec. 10, 2020	Dec. 09, 2021
Broadband antenna	Schwarzbeck	VULB 9163	HKE-012	Dec. 10, 2020	Dec. 09, 2021
Horn antenna	Schwarzbeck	9120D	HKE-013	Dec. 10, 2020	Dec. 09, 2021
Antenna Mast	Keleto	CC-A-4M	N/A	N/A	N/A
Position controller	Taiwan MF	MF7802	HKE-011	Dec. 10, 2020	Dec. 09, 2021
Radiated test software	Tonscend	TS+ Rev 2.5.0.0	HKE-082	N/A	N/A
RF cable (9KHz-1GHz)	Times	381806-001	N/A NA	N/A	N/A
Hf antenna	Schwarzbeck	LB-180400-KF	HKE-031	Dec. 10, 2020	Dec. 09, 2021
RF cable	Tonscend	1-18G	HKE-099	Dec. 10, 2020	Dec. 09, 2021
RF cable	Times	1-40G	HKE-034	Dec. 10, 2020	Dec. 09, 2021
Horn Antenna	Schewarzbeck	BBHA 9170	HKE-017	Dec. 10, 2020	Dec. 09, 2021
Spectrum analyzer	R&S	FSP40	HKE-025	Dec. 10, 2020	Dec. 09, 2021

**Note:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).



## 4.6.3. Test Data

### ANT 1

Operation Mode: 802.11a Mode with 5.2G TX CH Low

### Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Dotoctor Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5150	52.22	-2.49	49.73	74	-24.27	peak
5150	N. TESTING	-2.49	TESTING / N.TESTI	54	JESTING	AVG

### Vertical:

77.	4 D37	4.13/3 **	4 13/1		1.03	1.037
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5150	53.79	-2.49	51.3	74	-22.7	peak
5150	1	-2.49	1	54	1	AVG
.Co	ING AND THE		6	IG AND TO	.0	-NG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.2G

# Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	54.66	-2.11	52.55	74	-21.45	peak
5350	TING /	-2.11	1 TING	54	IX TEST	AVG

#### Vertical:

160	4.75	10	2. 1.14		260	4.7
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	53.16	-2.11	51.05	74	-22.95	peak
5350	MHUAK 1	-2.11	HUAK .	54	HUAK	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

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Operation Mode: 802.11n20 Mode with 5.2G TX CH Low

## Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5150	53.52	-2.49	51.03	74	-22.97	peak
5150	TESTING 1	-2.49	A TESTING	54	1	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

#### Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Dotoctor Typo
(MHz)	(dBµV)	(dB)	。 (dBμV/m)	(dBµV/m)	(dB)	Detector Type
5150	51.22	-2.49	48.73	74	-25.27	peak
5150	1	-2.49	1	54	-STING/	AVG
*	-1G	100	- G		VK 12	J.G

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.2G

# Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	53.41	-2.11	51.3	74	-22.7	peak
5350	TING /	-2.11	1 -11116	54	EST	AVG

### Vertical:

200	1.12	70,0	47		76,5	470
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	52.77	-2.11	50.66	74	-23.34	peak
5350	MAK .	-2.11	HUAK S	54	WAK	AVG



Operation Mode: 802.11 n40 Mode with 5.2G TX CH Low

# Horizontal

F	requency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
10	(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
NG	5150	54.06	-2.49	51.57	74	-22.43	peak
	5150	STING /	-2.49	LANVESTING	54	1	AVG

### Vertical:

THE PARTY OF THE P		ATTIME PARTY	DESTRUCTION OF THE PROPERTY OF		Mar. VIV	Diction .
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5150	53.41	-2.49	50.92	74	-23.08	peak
5150	1	-2.49	1	54	ESTING 1	AVG
	-16	200	-16	No.	4-	

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.2G

# Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	53.85	-2.11	51.74	74	-22.26	peak
5350	TING 1	-2.11	1 11116	54	EST	AVG

#### Vertical:

260		200	4.1		202	4.7
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	53.46	-2.11	51.35	74	-22.65	peak
5350	ALLAK 1	-2.11	HUAK	54	WAK	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.





Operation Mode: 802.11 ac20 Mode with 5.2G TX CH Low

# Horizontal

F	requency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
10	(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
NG	5150	53.04	-2.49	50.55	74	-23.45	peak
	5150	STING /	-2.49	LANTESTING	54	1	AVG

### Vertical:

ASSESSA.		ATTEN PARTY	DESCRIPT .		The House	DECEMBY .
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5150	53.12	-2.49	50.63	74	-23.37	peak
5150	1	-2.49	1	54	CTING /	AVG
	TNG	ANKTES	D HEATING	"IAM	100	TING

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.2G

# Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	54.56	-2.11	52.45	74	-21.55	peak
5350	TING /	-2.11	1 -11116	54	EST	AVG

### Vertical:

45	1760	45.	477		165	470
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	52.06	-2.11	49.95	74	-24.05	peak
5350	HUAK !	-2.11	HUAK	54	WAR	AVG



Operation Mode: 802.11 ac40 Mode with 5.2G TX CH Low

## Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Dotactor Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
§ 5150	55.78	-2.49	53.29	74	-20.71	peak
5150	TESTING /	-2.49	LANZESTING	54	1	AVG

### Vertical:

Frequency Me	eter Reading		I Emiccion I aval I	Limits	Margin	
		Factor	Emission Level	LIIIIIS	Ivialyiii	Detector Typ
(MHz)	(dBµV)	(dB)	(dBµV/m)	。(dBμV/m)	(dB)	TIN
5150	54.22	-2.49	51.73	74	-22.27	peak
5150	1	-2.49	1	54	TING /	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.2G

# Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	54.26	-2.11	52.15	74	-21.85	peak
5350	TING /	-2.11	1 -11116	54	EST	AVG

### Vertical:

~5°	4700	-65'	1172		765	4750
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	51.71	-2.11	49.6	74	-24.4	peak
5350	HUAK I	-2.11	HUAK	54	MAK	AVG



Operation Mode: 802.11 ac80 Mode with 5.2G TX CH Low

## Horizontal

F	requency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
10	(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
NG	5150	55.89	-2.49	53.4	74	-20.6	peak
	5150	STING /	-2.49	NV/ESTING	54	1	AVG

### Vertical:

DOMA.		ATTING PARTY	DECEMA .		atting 1970	DECEMA .
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5150	53.14	-2.49	50.65	74	-23.35	peak
5150	1	-2.49	1	54	CTING /	AVG
5 . 5 .	TAIG	ANK TE	n and	194	100	-mG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.2G

# Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	55.65	-2.11	53.54	74	-20.46	peak
5350	-TING /	-2.11	1 -11116	54	EST	AVG

#### Vertical:

160	100		184-14		. 422	100
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	53.14	-2.11	51.03	74	-22.97	peak
5350	ALIAK I	-2.11	HUAK	54	WAK	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



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## ANT 2

Operation Mode: 802.11a Mode with 5.2G TX CH Low

### Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Data atau Tura
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5150	52.69	-2.49	50.2	74	-23.8	peak
5150	1	-2.49	1	54	1	AVG

## Vertical:

Detector Type	Margin	Limits	Emission Level	Factor	Meter Reading	Frequency
Detector Type	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(dBµV)	(MHz)
peak	-23.97	74	50.03	-2.49	52.52	5150
AVG	1	54	HUAK	-2.49	1	5150

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.2G

# Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	54.14	-2.11	52.03	74	-21.97	peak
5350	TING /	-2.11	1 TING	54	KTES !!	AVG

#### Vertical:

			W		200	4 \
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	52.22	-2.11	50.11	74	-23.89	peak
5350	HUAK I	-2.11	HUAK .	54	HUAK	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: 802.11n20 Mode with 5.2G TX CH Low

## Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Tyre
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5150	56.84	-2.49	54.35	74	-19.65	peak
5150	ESTING /	-2.49	JAK TESTING	54	1	AVG

#### Vertical:

The state of the s	1	ATTEN ATT	Diction .		ATTING THE	DECEMA *
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Dotoctor Typo
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5150	54.56	-2.49	52.07	74	-21.93	peak
5150	1	-2.49	1	54	ESTING/	AVG
	-16	26	-16		24	- JG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.2G

# Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	53.28	-2.11	51.17	74	-22.83	peak
5350	TING /	-2.11	1 11116	54	EST	AVG

### Vertical:

23.4	140	100		. 4. V	4.057
Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	— Detector Type
52.87	-2.11	50.76	74	-23.24	peak
UAK	-2.11	HUAK	54	WAK	AVG
	(dBµV)	(dBµV) (dB) 52.87 -2.11	(dBμV) (dB) (dBμV/m) 52.87 -2.11 50.76	(dBμV)     (dB)     (dBμV/m)     (dBμV/m)       52.87     -2.11     50.76     74	(dBμV)     (dB)     (dBμV/m)     (dBμV/m)     (dB)       52.87     -2.11     50.76     74     -23.24



Operation Mode: 802.11 n40 Mode with 5.2G TX CH Low

# Horizontal

F	requency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
NG	5150	54.11	-2.49	51.62	74	-22.38	peak
	5150	STING /	-2.49	AK/ESTING	54	1	AVG

### Vertical:

Transfer .		ATTEN ATT	AND THE RESERVE AND THE PERSON NAMED IN COLUMN TO PERSON NAMED IN COLU		The House	DECEMBY .
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5150	53.69	-2.49	51.2	74	-22.8	peak
<sub>s</sub> 5150	1	-2.49	1	54	STING /	AVG
	AG.	. 1/6 10	A)G	110	1.	A)G

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.2G

# Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	55.63	-2.11	53.52	74	-20.48	peak
5350	TING /	-2.11	1 71116	54	EST	AVG

#### Vertical:

160	4	200	4		200	4 1
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	54.27	-2.11	52.16	74	-21.84	peak
5350	HUAK 1	-2.11	HUAK	54	WAK	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.





Operation Mode: 802.11 ac20 Mode with 5.2G TX CH Low

## Horizontal

-67	requency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
10	(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
NG	5150	54.02	-2.49	51.53	74	-22.47	peak
	5150	STING /	-2.49	AV/ESTING	54	1	AVG

### Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Dotoctor Typ
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Typ
5150	53.14	-2.49	50.65	74	-23.35	peak
5150	1	-2.49	1	54	THE !	AVG



Operation Mode: TX CH High with 5.2G

# Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Data star Time
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	54.32	-2.11	52.21	74	-21.79	peak
5350	TING /	-2.11	1 -1111/6	54	EST	AVG

### Vertical:

765	4750	762	117		765	470
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	54.77	-2.11	52.66	74	-21.34	peak
5350	HUAK !	-2.11	HUAK	54	WAK	AVG

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Operation Mode: 802.11 ac40 Mode with 5.2G TX CH Low

## Horizontal

F	requency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
10	(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
NG	5150	55.78	-2.49	53.29	74	-20.71	peak
	5150	STING /	-2.49	NV/ESTING	54	1	AVG

### Vertical:

AND A		The Ho.	100 m		The HO.	15/80 v.
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5150	54.22	-2.49	51.73	74	-22.27	peak
5150	1	-2.49	1	54	TING /	AVG
	- Antonno Footor	v Oakla I aaa	Day and lift shift	MAK	62,	TING

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.2G

# Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	55.56	-2.11	53.45	74	-20.55	peak
5350	TING /	-2.11	1 -11116	54	EST	AVG

### Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	53.74	-2.11	51.63	74	-22.37	peak
5350	MAK. 1	-2.11	A HUAK S	54	WAK	AVG



Operation Mode: 802.11 ac80 Mode with 5.2G TX CH Low

# Horizontal

F	requency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
NG	5150	53.65	-2.49	51.16	74	-22.84	peak
	5150	STING /	-2.49	TANKESTING	54	1	AVG

### Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Data stan Tuna
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5150	55.49	-2.49	53	74	·/ <sup>MXTE-</sup> -21	peak
5150	1	-2.49	1	54	STING 1	AVG
	-NG	OKTE	WG	No.	(C)	-NG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.2G

# Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Data star Time
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	53.87	-2.11	51.76	74	-22.24	peak
5350	TING /	-2.11	1 -1111/6	54	EST	AVG

#### Vertical:

160	1.14	160	4.1		100	4.74
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	53.26	-2.11	51.15	74	-22.85	peak
5350	ALIAK 1	-2.11	HUAK	54	MAKI	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.





MIMO:

Operation Mode: 802.11n20 Mode with 5.2G TX CH Low

### Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Dotootor Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5150	53.15	-2.49	50.66	74 🔘 HU	-23.34	peak
5150	/	-2.49	1	54	s 1	AVG

# Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5150	53.42	-2.49	50.93	74	-23.07	peak
5150	TESTING /	-2.49	WAX TESTING	54	1	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.2G

# Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	55.15	-2.11	53.04	74	-20.96	peak
5350	TING /	-2.11	1 -11116	54	EST	AVG

### Vertical:

Frequency Meter Re	ading Factor	Emission Level	Limits	Margin	HUAN
(MHz) (dPu)					I Dotoctor Typo
(мнг) (черч	V) (dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350 54.8	8 -2.11	52.77	<sub>N</sub> 74	-21.23	peak
5350 /	-2.11	A HUAR	54	WAK	AVG



Operation Mode: 802.11 n40 Mode with 5.2G TX CH Low

# Horizontal

F	requency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
10	(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
NG	5150	53.14	-2.49	50.65	74	-23.35	peak
	5150	STING /	-2.49	NV/ESTING	54	1	AVG

### Vertical:

DOM:		ALCO HO	ASSESS.		The Ho	DOME,
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5150	55.85	-2.49	53.36	74	-20.64	peak
5150	1	-2.49	1	54	STING /	AVG
	TAIG	ALK TO	D HEATING	"IAM	V-22	TING

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.2G

# Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	54.16	-2.11	52.05	74	-21.95	peak
5350	TING /	-2.11	1 -11116	54	EST	AVG

### Vertical:

~65°°	4 760	~65'	1700		765	4760
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Dotoctor Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	56.87	-2.11	54.76	74	-19.24	peak
5350	ALLAK I	-2.11	HUAK I	54	MAK	AVG



Operation Mode: 802.11 ac20 Mode with 5.2G TX CH Low

# Horizontal

F	requency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
10	(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
NG	5150	53.52	-2.49	51.03	74	-22.97	peak
	5150	STING /	-2.49	AN ESTING	54	1	AVG

### Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
5150	54.74	-2.49	52.25	74	-21.75	peak
5150	1	-2.49	1	54	TING /	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.2G

# Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Data star Time
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	54.33	-2.11	52.22	74	-21.78	peak
5350	TING /	-2.11	1 -11116	54	EST	AVG

## Vertical:

762	472	45	477		762	4700
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	54.15	-2.11	52.04	yo 74	-21.96	peak
5350	ALLAK I	-2.11	HUAK	54	WAK	AVG
Remark: Factor	= Antenna Factor	+ Cable Loss –	Pre-amplifier	1000	P	(920)





Operation Mode: 802.11 ac40 Mode with 5.2G TX CH Low

## Horizontal

F	requency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
10	(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
NG	5150	56.76	-2.49	54.27	74	-19.73	peak
	5150	STING /	-2.49	AK/ESTING	54	1	AVG

### Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5150	55.65	-2.49	53.16	74	-20.84	peak
5150	1	-2.49	1	54	_mG	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.2G

## Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	54.05	-2.11	51.94	74	-22.06	peak
5350	TING /	-2.11	1 -1111/6	54	EST	AVG

## Vertical:

45	W TEN	-ES1	"TEN		45,	W TEC
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Dotoctor Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	55.88	-2.11	53.77	74	-20.23	peak
5350	HUAK KE	-2.11	HUAK	54	WAK	AVG

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Operation Mode: 802.11 ac80 Mode with 5.2G TX CH Low

## Horizontal

F	requency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
10	(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
NG	5150	54.14	-2.49	51.65	74	-22.35	peak
	5150	STING /	-2.49	LANVESTING	54	1	AVG

### Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Dotostor Tyro
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5150	53.66	-2.49	51.17	74	-22.83	peak
5150	1	-2.49	1	54	TING I	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.2G

## Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	55.22	-2.11	53.11	74	-20.89	peak
5350	TING /	-2.11	1 11116	54	EST	AVG

## Vertical:

100	172	100	472		100	470
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
5350	53.79	-2.11	51.68	74	-22.32	peak
5350	HUAK I	-2.11	HUAK S	54	MAK	AVG



## 4.7. SPURIOUS EMISSION

## 4.7.1.1. Test Specification

Test Requirement:	FCC CFR47	Part 15 Se	ction 15.	407 & 1	5.209 & 15.205	
Test Method:	KDB 789033	D02 v02r0	1		(i)	
Frequency Range:	9kHz to 40G	Hz		TESTING		
Measurement Distance:	3 m	JAK TESTING	O HO	1000	MAKTESTING	
Antenna Polarization:	Horizontal &	Vertical		NG		
Operation mode:	Transmitting	mode with	modulat	ion	100	
	Frequency	Detector	RBW	VBW	Remark	
	9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value	
Receiver Setup:	150kHz- 30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value	
•	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value	
	Above 1GHz	Peak	1MHz	3MHz	Peak Value	
	7.0070 10112	Peak	1MHz	10Hz	Average Value	
Limit:	an e.i.r.p. of −27 dBm/MHz.  The limit of frequency below 1GHz and which fall in restricted ands should complies 15.209.					
	For radiated	JUG	MAKTEST	)MHz	STING OKTESTING	
Test setup:	For radiated	emissions 3 m Turn Table Ground Plan	below 30	OMHz RX Antenna Time Receiver	STING HUAY TESTINE  ATHAY TESTINE  ATHAY TESTINE  ESTINE	
Test setup:	For radiated  30MHz to 10	emissions 3 m Turn Table Ground Plan	below 30	RX Antenna  Receiver		

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J.G. Oh	. 10 M
	Ant. feed point  3 m  1-4 m  Ground Plane
	Receiver Amp.
Test Procedure:	<ol> <li>The EUT was placed on the top of a rotating table 0.8 meters above the groundat a 3 meter camber. The table was rotated 360 degrees todetermine the position of the highest radiation.</li> <li>The EUT was set 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower.</li> <li>The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</li> <li>For each suspected emission, the EUT was arranged to its worst case and thenthe antenna was tuned to heights from 1 meter to 4 meters and the rotatablewas turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>The test-receiver system was set to Peak Detect Function and SpecifiedBandwidth with Maximum Hold Mode.</li> <li>If the emission level of the EUT in peak mode was 10dB lower than the limitspecified, then testing could be stopped and the peak values of the EUT wouldbe reported. Otherwise the emissions that did not have 10dB margin would bere-tested one by one using peak, quasi-peak or average method as specified andthen reported in a data sheet.</li> </ol>
Test results:	PASS
- 47/200	1/20-7





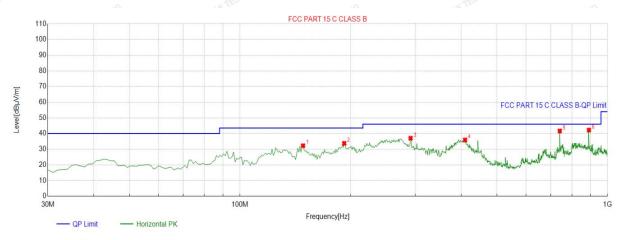
## 4.7.2. Test Data

test mode: TX 802.11a 5180MHz

All the test modes completed for test. The worst case of Radiated Emission; the test data of this mode was reported.

### **Below 1GHz**

## Horizontal



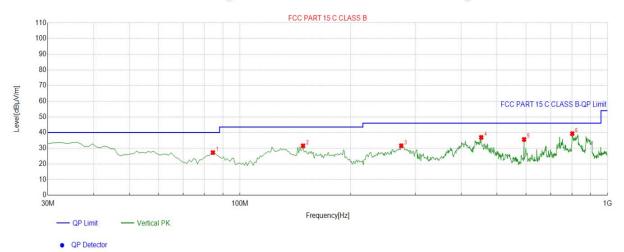
QP Detector

	-								
Suspe	ected List								
NO.	Freq. [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	148.4585	-18.98	51.22	32.24	43.50	11.26	100	3	Horizontal
2	192.1522	-15.81	49.55	33.74	43.50	9.76	100	134	Horizontal
3	291.1912	-12.83	49.84	37.01	46.00	8.99	100	153	Horizontal
4	409.6497	-10.23	46.15	35.92	46.00	10.08	100	217	Horizontal
5	741.7217	-4.06	45.70	41.64	46.00	4.36	100	76	Horizontal
6	890.2803	-1.88	44.11	42.23	46.00	3.77	100	296	Horizontal

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



### Vertical



Suspe	cted List								
NO.	Freq.	Factor	Reading	Level	Limit	Margin	Height	Angle	Polarity
NO.	[MHz]	[dB]	[dBµV/m]	[dBµV/m]	[dBµV/m]	[dB]	[cm]	[°]	
1	84.3744	-18.42	45.64	27.22	40.00	12.78	100	6	Vertical
2	148.4585	-18.98	50.52	31.54	43.50	11.96	100	66	Vertical
3	274.6847	-13.47	45.02	31.55	46.00	14.45	100	121	Vertical
4	453.3433	-8.88	45.78	36.90	46.00	9.10	100	359	Vertical
5	593.1632	-6.57	42.18	35.61	46.00	10.39	100	125	Vertical
6	801.9219	-3.09	42.40	39.31	46.00	6.69	100	359	Vertical

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

## **Harmonics and Spurious Emissions**

## Frequency Range (9 kHz-30MHz)

Frequency (MHz)	Level@3m (dBµV/m)	Limit@3m (dBµV/m)
-mG	ALTES!	ANK TES
WAKTES.	WAKTES.	MAKTES
<b>.</b>	<b>◎</b> '	

**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.



## **Above 1GHz**

5.2G 802.11 a Mode All modes of operation were investigated and the worst-case of Antenna 1 are reported. LOW CH 36

## Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	D. C. C. T
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	60.34	-4.59	55.75	74	-18.25	peak
3647	44.85	4.59 -	40.26	54	-13.74	AVG
10360	55.97	3.74	59.71	68.2	-8.49	peak

### Vertical:

Me	- MC	7010	TOTAL STATE OF THE		7010	100
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	60.79	-4.59	56.2	74 HUMA	-17.8	peak
3647	46.51	-4.59	41.92	54	-12.08	AVG
10360	50.93	3.74	54.67	68.2	-13.53	peak
emark: Factor	= Antenna Factor	+ Cable Loss -	- Pre-amplifier	0	ESTING	TESTING

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MID CH40

## Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	61.44	-4.59	56.85	74	-17.15	peak
3647	48.7	-4.59	44.11	54	-9.89	AVG
10400	54.58	3.74	58.32	68.2	-9.88	peak

## Vertical:

5	1997	0.00	(000)		1000	(200)
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	61.6	-4.59	57.01	74	-16.99	peak
3647	44.17	-4.59	39.58	54	-14.42	AVG
10400	52.14	3.74	55.88	68.2	-12.32	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

#### HIGH CH 48

#### Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Data start Time
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	60.13	-4.59	55.54	74	-18.46	peak
3647	43.23	-4.59	38.64	54	-15.36	AVG
10480	51.2	3.75	54.95	68.2	-13.25	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

#### Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	60.77	-4.59	56.18	74	-17.82	peak
3647	45.44	-4.59	40.85	54	-13.15	AVG
10480	51.23	3.75	54.98	68.2	-13.22	peak

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

#### Remark:

- (1) Measuring frequencies from 1 GHz to the 40 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 record 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.
- (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.

5.2G 802.11n20 Mode

All modes of operation were investigated and the worst-case of MIMO are reported. LOW CH 36

### Horizontal:

					. 1/1/4
Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
63.22	-4.59	58.63	74	-15.37	peak
48.05	-4.59	43.46	54	-10.54	AVG
52.94	3.74	56.68	68.2	-11.52	peak
52.94	3.74	56.68	68.2	-11.52	pea
	(dBμV) 63.22 48.05	(dBµV) (dB) 63.22 -4.59 48.05 -4.59	(dBμV) (dB) (dBμV/m) 63.22 -4.59 58.63 48.05 -4.59 43.46	(dBμV)     (dB)     (dBμV/m)     (dBμV/m)       63.22     -4.59     58.63     74       48.05     -4.59     43.46     54	(dBμV)     (dB)     (dBμV/m)     (dBμV/m)     (dBμV/m)       63.22     -4.59     58.63     74     -15.37       48.05     -4.59     43.46     54     -10.54

### Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	61.41	-4.59	56.82	74	-17.18	peak
3647	43.6	-4.59	39.01	54	-14.99	AVG
10360	52.74	3.74	56.48	68.2	· -11.72	peak
	9/1/1	Kerry	l .	. "IAK TO		

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.





MID CH40

## Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	61.77	-4.59	57.18	74	-16.82	peak
3647	46.32	-4.59	41.73	54	-12.27	AVG
10400	52.1	3.74	55.84	68.2	-12.36	peak

## Vertical:

. (E)			(323)		600000	(3000)
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	61.81	-4.59	57.22	74	-16.78	peak
3647	42.17	-4.59	37.58	54	-16.42	AVG
10400	51.36	3.74	55.1	68.2	-13.1	peak



HIGH CH 48

#### Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	60.86	-4.59	56.27	74	-17.73	peak
3647	42.19	-4.59	37.6	54	-16.4	AVG
10480	53.18	3.75	56.93	68.2	-11.27	peak

#### Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Dotostor Typo
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	59.75	-4.59	55.16	74	-18.84	peak
3647	44.43	-4.59	39.84	54	-14.16	AVG
10480	50.53	3.75	54.28	68.2	-13.92	peak
110	The .	(2)	ION	(0)		IAK

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

#### Remark:

- (1) Measuring frequencies from 1 GHz to the 40 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 record 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.
- (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.



5.2G 802.11n40 Mode All modes of operation were investigated and the worst-case of MIMO are reported. LOW CH 38

### Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	MINITE TO
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	61.14	-4.59	56.55	74	-17.45	peak
3647	47.02	-4.59	42.43	54	s -11.57	AVG
10360	50.05	3.74	53.79	68.2	-14.41	peak

### Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	62.92	-4.59	58.33	74	-15.67	peak
3647	46.25	-4.59	41.66	54	-12.34	AVG
10360	52.03	3.74	55.77	68.2	-12.43	peak



HIGH CH 46

#### Horizontal:

Meter Reading	Factor	Emission Level	Limits	Margin	Detector Tune
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
59.27	-4.59	54.68	74	-19.32	peak
42.85	-4.59	38.26	54	-15.74	AVG
52.73	3.75	56.48	68.2	-11.72	peak
	(dBµV) 59.27 42.85	(dBµV) (dB) 59.27 -4.59 42.85 -4.59	(dBμV)     (dB)     (dBμV/m)       59.27     -4.59     54.68       42.85     -4.59     38.26	(dBμV)     (dB)     (dBμV/m)     (dBμV/m)       59.27     -4.59     54.68     74       42.85     -4.59     38.26     54	(dBμV)     (dB)     (dBμV/m)     (dBμV/m)     (dBμV/m)       59.27     -4.59     54.68     74     -19.32       42.85     -4.59     38.26     54     -15.74

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

#### Vertical:

1 1123	19		18009		600.375)	13099
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	61.89	-4.59	57.3	74	-16.7	peak
3647	44.62	-4.59	40.03	54	-13.97	AVG
10480	50.92	3.75	54.67	68.2	-13.53	peak
31.	K	(409)	. 0/4	(1039)	•	10%

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

#### Remark:

- (1) Measuring frequencies from 1 GHz to the 40 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 record 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.
- (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.

5.2G 802.11ac20 Mode
All modes of operation were investigated and the worst-case of MIMO are reported.
LOW CH 36

## Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	62.9	-4.59	58.31	74	-15.69	peak
3647	44.71	-4.59	40.12	54	-13.88	AVG
10360	53.91	3.74	57.65	68.2	-10.55	peak

## Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	60.88	-4.59	56.29	74	-17.71	peak
3647	43.55	-4.59	38.96	54	-15.04	AVG
10360	49.88	3.74	53.62	68.2	-14.58	peak

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

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MID CH40

## Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Turns
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	60.95	-4.59	56.36	74	-17.64	peak
3647	46.17	-4.59	41.58	54	-12.42	AVG
10400	53.41	3.74	57.15	68.2	-11.05	peak

Vertical:

20'		and MV.	(CARD 7.		- UV.	ACMIEN, V
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	57.22	-4.59	52.63	<sup>571100</sup> 74	-21.37	peak
3647	42.75	-4.59	38.16	54	-15.84	AVG
10400	52.21	3.74	55.95	68.2	-12.25	peak
	TIME	1010	-11/40		Obo	-71/4-

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



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HIGH CH 48

#### Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	59.94	-4.59	55.35	74	-18.65	peak
3647	42.17	-4.59	37.58	54	-16.42	AVG
10480	51.17	3.75	54.92	68.2	-13.28	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

#### Vertical:

, 3\L1' (500)		- 1373	40000, 17		137.31	AND 1
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	61.47	-4.59	56.88	74	-17.12	peak
3647	44.71	-4.59	40.12	54	-13.88	AVG
10480	51.13	3.75	54.88	68.2	-13.32	peak
	-0/10-	100	Ola.		31-	210-

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

#### Remark:

- (1) Measuring frequencies from 1 GHz to the 40 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 record 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.
- (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.



5.2G 802.11ac40 Mode All modes of operation were investigated and the worst-case of MIMO are reported. LOW CH 38

### Horizontal:

1		4 1/4	- W 1		. 16	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	61.22	-4.59	56.63	74	-17.37	peak
3647	43.5	-4.59	38.91	54	-15.09	AVG
10360	53.27	3.74	57.01	68.2	-11.19	peak
Remark: Factor	= Antenna Factor	+ Cable Loss -	- Pre-amplifier.	The Control of the Co	N TESTING	LAKTESTING

## Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Data stor Trimo
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	59.91	-4.59	55.32	74	-18.68	peak
3647	43.75	-4.59	39.16	54	-14.84	AVG
10360	52.7	3.74	56.44	68.2	-11.76	peak

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HIGH CH 46

#### Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
3647	60.18	-4.59	55.59	74	-18.41	peak
3647	43.28	-4.59	38.69	54	-15.31	AVG
10480	56.03	3.75	59.78	68.2	-8.42	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

#### Vertical:

. 11.7		- 11/1	2018 Y		- 11/1	203.00
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	61.29	-4.59	56.7	74	-17.3	peak
3647	46.65	-4.59	42.06	54	-11.94	AVG
10480	52.75	3.75	56.5	68.2	-11.7	peak
	1010	10%	JUNE		DI.	JUL

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

#### Remark:

- (1) Measuring frequencies from 1 GHz to the 40 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 record 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.
- (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.



5.2G 802.11ac80 Mode

All modes of operation were investigated and the worst-case of MIMO are reported. CH 42

#### Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Tune
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	61.1	-4.59	56.51	74	-17.49	peak
3647	47.91	-4.59	43.32	54	-10.68	AVG
10360	55.04	3.74	58.78	68.2	-9.42	peak

### Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
3647	61.58	-4.59	56.99	74	-17.01	peak
3647	43.56	-4.59	38.97	54	-15.03	AVG
10360	50.92	3.74	54.66	68.2	-13.54	peak

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

### Remark:

- (1) Measuring frequencies from 1 GHz to the 40 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 record 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.
- (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.

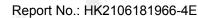


4.8. FREQUENCY STABILITY MEASUREMENT

## 4.8.1. Test Specification

Test Requirement:	FCC Part15 Section 15.407(g)
Test Method:	ANSI C63.10: 2013
Limit:	The frequency tolerance shall be maintained within the band of operation frequency over a temperature variation of 0 degrees to 35 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.
Test Setup:	Spectrum Analyzer EUT  AC/DC Power supply
Test Procedure:	The EUT was placed inside the environmental test chamber and powered by nominal AC/DC voltage. b. Turn the EUT on and couple its output to a spectrum analyzer. c. Turn the EUT off and set the chamber to the highest temperature specified. d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature. f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
Test Result:	PASS
Remark:	N/A WTESTING HUMTES IN GHUMTES IN

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## Test Result as follows:

Mode	Voltage (V)	FHL (5180MHz)	Deviation (KHz)	FHH (5240MHz)	Deviation (KHz)
MINAR.	13.2V	5179.984	-16	5240.013	13
5.2G Band	12V	5180.014	14	5239.984	-16
A TESTING	10.8V	5179.979	-21	5239.979	-21

Mode	Temperature (°C)	FHL (5180MHz)	Deviation (KHz)	FHH (5240MHz)	Deviation (KHz)
	-30	5179.977	-23	5240.011	11
	-20	5180.012	12	5239.988	-12
	-10	5180.018	18	5240.023	23
	0	5179.986	-14	5239.992	-8
5.2G Band	10	5179.974	·· <sup>©</sup> -26	5239.971	-29
	20	5180.012	12	5239.983	-17
	30	5179.985	-15	5240.024	24
	40	5180.009	TESTING 9	5239.976	-24
	50	5180.023	23	5239.972	-28

FICATION.

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## 5. ANTENNA 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 15.249, 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 Internal Antenna, which use a special interface and cannot easily replace. The directional gains of antenna used for transmitting is 1dBi.

### **WIFI ANTENNA**



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# 6. PHOTOGRAPHS OF TEST SETUP



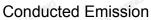


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Report No.: HK2106181966-4E

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7. PHOTOS OF THE EUT

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

\*End of Report\*\*\*\*\*