

**Shenzhen Global Test Service Co.,Ltd.**

No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

RF Exposure evaluation**Report Reference No.....: GTS20200907014-1-15****FCC ID.: 2AX7EWCUBE-1000**

Compiled by

(position+printed name+signature) : File administrators Peter Xiao

Supervised by

(position+printed name+signature) : Test Engineer Moon Tan

Approved by

(position+printed name+signature) : Manager Simon Hu

Date of issue: Nov.23, 2020

Representative Laboratory Name.: Shenzhen Global Test Service Co.,Ltd.

Address: No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

Applicant's name.....: Donica Aviation Engineering Co., Ltd.

Address: 1st Floor, Bldg 15, Wisdomland Business Park, No. 15 Guankou 2nd Road, Nantou, Nanshan District, Shenzhen, China

Test specification**47CFR §1.1310**Standard.....: **47CFR §2.1091****KDB447498 v06**

TRF Originator.....: Shenzhen Global Test Service Co.,Ltd.

Master TRF: Dated 2014-12

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Test item description: Wireless Cube (abbreviated as wCube, also called AirCinema Cube)

Trade Mark: DONICA

Manufacturer: Donica Aviation Engineering Co., Ltd.

Model/Type reference: wCube-1000

Listed Models: N/A

Hardware Version: V1.0

Software Version.....: V1.1

Rating: DC 28.0V

Result: **PASS**

TEST REPORT

Test Report No. :	GTS20200907014-1-15	Nov.23, 2020
		Date of issue

Equipment under Test : Wireless Cube (abbreviated as wCube, also called AirCinema Cube)

Model /Type : wCube-1000

Listed model : N/A

Applicant : **Donica Aviation Engineering Co., Ltd.**

Address : 1st Floor, Bldg 15, Wisdomland Business Park, No. 15 Guankou 2nd Road, Nantou, Nanshan District, Shenzhen, China

Manufacturer : **Donica Aviation Engineering Co., Ltd.**

Address : 1st Floor, Bldg 15, Wisdomland Business Park, No. 15 Guankou 2nd Road, Nantou, Nanshan District, Shenzhen, China

Test Result:	PASS
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The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. SUMMARY

1.1 EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

● /	Length (m) :	/
	Shield :	/
	Detachable :	/

1.2 Product Description

Product Name	Wireless Cube (abbreviated as wCube, also called AirCinema Cube)
Trade Mark	DONICA
Model/Type reference	wCube-1000
List Model	N/A
Model Declaration	N/A
Hardware version	V1.0
Software version	V1.0
Power supply:	DC 28.0V
Sample ID	GTS20200907014-1-1#& GTS20200907014-1-2#
2G	
Support Band	GSM850/PCS1900/GPRS850/GPRS1900/EDGE850/EDGE1900
Release Version	R99
GPRS Class	Class 12
EGPRS Class	Class 12
GSM/EDGE/GPRS Power Class	GSM850:Power Class 4/ PCS1900:Power Class 1
GPRS/EDGE Multislot Class	GPRS/EDGE: Multi-slot Class 12
Type Of Modulation	GMSK for GSM/GPRS; GMSK/8PSK for EGPRS
Antenna Description	Internal Antenna; 0dBi (max.) For GSM 850; 0dBi (max.) For DCS 1900;
3G	
UMTS Operation Frequency Band	UMTS FDD Band 2, 4, 5
WCDMA Release Version	R6
HSDPA Release Version	Release 6
Modulation Type	QPSK for UMTS
Antenna Description	Internal Antenna; 1.0dBi (max.) For WCDMA Band 2, 4,5;
LTE	
LTE Operation Frequency Band	LTE Band 2, 4, 5, 7, 12, 13, 25, 26, 38, 41
LTE Release Version	R9
Type Of Modulation	QPSK/16QAM
Antenna Description	External&Internal Antenna; 2.0dBi (max.) For LTE Band 2, 4, 5, 7, 12, 13, 25, 26, 38, 41
WIFI(2.4G Band)	

Frequency Range	2412MHz ~ 2462MHz
Channel Spacing	5MHz
Channel Number	11 Channel for 20MHz bandwidth(2412~2462MHz) 7 channels for 40MHz bandwidth(2422~2452MHz)
Modulation Type	802.11b: DSSS; 802.11g/n/ax: OFDM
Antenna Description	Four same Internal Antenna, support MIMO technology ANT9 used for WIFI TX/RX, 2.0dBi(Max.) for 2.4G Band ANT10 used for WIFI TX/RX, 2.0dBi(Max.) for 2.4G Band ANT11 used for WIFI TX/RX, 2.0dBi(Max.) for 2.4G Band ANT12 used for WIFI TX/RX, 2.0dBi(Max.) for 2.4G Band
WIFI(5.2G Band)	
Frequency Range	5180MHz ~ 5240MHz
Channel Number	4 Channels for 20MHz bandwidth(5180-5240MHz) 2 channels for 40MHz bandwidth(5190~5230MHz) 1 channels for 80MHz bandwidth(5210MHz)
Modulation Type	802.11a/n/ac/ax: OFDM
Antenna Description	Four Internal Antennas; support MIMO technology ANT5 used for WIFI TX/RX, 2.0dBi(Max.) for 5.2G Band ANT6 used for WIFI TX/RX, 2.0dBi(Max.) for 5.2G Band ANT7 used for WIFI TX/RX, 2.0dBi(Max.) for 5.2G Band ANT8 used for WIFI TX/RX, 2.0dBi(Max.) for 5.2G Band
WIFI (5.8G Band)	
Frequency Range	5745MHz ~ 5825MHz
Channel Number	5 channels for 20MHz bandwidth(5745-5825MHz) 2 channels for 40MHz bandwidth(5755~5795MHz) 1 channels for 80MHz bandwidth(5775MHz)
Modulation Type	802.11a/n/ac/ax: OFDM
Antenna Description	Four Internal Antennas; support MIMO technology ANT1 used for WIFI TX/RX, 2.0dBi(Max.) for 5.8G Band ANT2 used for WIFI TX/RX, 2.0dBi(Max.) for 5.8G Band ANT3 used for WIFI TX/RX, 2.0dBi(Max.) for 5.8G Band ANT4 used for WIFI TX/RX, 2.0dBi(Max.) for 5.8G Band

2. TEST ENVIRONMENT

2.1 Address of the test laboratory

Shenzhen Global Test Service Co.,Ltd.

No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

2.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS (No. CNAS L8169)

Shenzhen Global Test Service Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2019 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA (Certificate No. 4758.01)

Shenzhen Global Test Service Co., Ltd. has been assessed by the American Association for Laboratory Accreditation (A2LA). Certificate No. 4758.01.

Industry Canada Registration Number. is 24189.

FCC Designation Number is CN1234.

FCC Registered Test Site Number is165725.

2.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

2.4 Statement of the measurement uncertainty

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 TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen Global Test Service Co.,Ltd 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.

Hereafter the best measurement capability for Shenzhen GTS laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.57 dB	(1)

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

3. METHOD OF MEASUREMENT

3.1 Applicable Standard

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

KDB447498 v06: Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies

3.2 Requirement

Systems operating under the provisions of FCC 47 CFR section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

In accordance with KDB447498D01 for Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0 . The MPE ratio of each antenna is determined at the minimum test separation distance required by the operating configurations and exposure conditions of the host device, according to the ratio of field strengths or power density to MPE limit, at the test frequency. Either the maximum peak or spatially averaged results from measurements or numerical simulations may be used to determine the MPE ratios. Spatial averaging does not apply when MPE is estimated using simple calculations based on far-field plane-wave equivalent conditions. The antenna installation and operating requirements for the host device must meet the minimum test separation distances required by all antennas, in both standalone and simultaneous transmission operations, to satisfy compliance.

3.3 Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	6
3.0 – 30	1842/f	4.89/f	(900/f ²)*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	/	/	f/300	6
1500 – 100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	30
3.0 – 30	824/f	2.19/f	(180/f ²)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	/	/	f/1500	30
1500 – 100,000	/	/	1.0	30

F=frequency in MHz

*=Plane-wave equivalent power density

3.4 MPE Calculation Method

Predication of MPE limit at a given distance
Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{PG}{4\pi R^2}$$

Where: S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator

R=distance to the center of radiation of the antenna

As declared by the Applicant, the EUT transmits with the maximum source-based Duty Cycle of 100%-see the User manual, and the EUT is a wireless device used in a mobile application, at least 50 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum mobile separation distance, $r = 50\text{cm}$, as well as the gain of the used antenna is 2.0dBi for WLAN, and the power drift from Turn-up Procedure provide by manufacturer as following states, the RF power density can be obtained.

3.5 Antenna Information

wCube-1000 can only use antennas certificated as follows provided by manufacturer;

Internal Identification	Antenna Identification in Internal photos	Antenna type and antenna number	Operate frequency band	Maximum antenna gain
Antenna 1	2.4GWLAN ANT9	Internal antenna	2.4 – 2.5 GHz	2.00dBi(Max.)
Antenna 2	2.4GWLAN ANT10	Internal antenna	2.4 – 2.5 GHz	2.00dBi(Max.)
Antenna 3	2.4GWLAN ANT11	Internal antenna	2.4 – 2.5 GHz	2.00dBi(Max.)
Antenna 4	2.4GWLAN ANT12	Internal antenna	2.4 – 2.5 GHz	2.00dBi(Max.)
Antenna 5	5.2GWLAN ANT5	Internal antenna	5.0 – 6.0 GHz	2.00dBi(Max.)
Antenna 6	5.2GWLAN ANT6	Internal antenna	5.0 – 6.0 GHz	2.00dBi(Max.)
Antenna 7	5.2GWLAN ANT7	Internal antenna	5.0 – 6.0 GHz	2.00dBi(Max.)
Antenna 8	5.2GWLAN ANT8	Internal antenna	5.0 – 6.0 GHz	2.00dBi(Max.)
Antenna 9	5.8GWLAN ANT1	Internal antenna	5.0 – 6.0 GHz	2.00dBi(Max.)
Antenna 10	5.8GWLAN ANT2	Internal antenna	5.0 – 6.0 GHz	2.00dBi(Max.)
Antenna 11	5.8GWLAN ANT3	Internal antenna	5.0 – 6.0 GHz	2.00dBi(Max.)
Antenna 12	5.8GWLAN ANT4	Internal antenna	5.0 – 6.0 GHz	2.00dBi(Max.)
Antenna 13	GSM&WCDMA<E ANT (module 1)	External antenna	600 – 3000 MHz	2.00dBi(Max.)
Antenna 14	GSM&WCDMA<E ANT (module 2)	Internal antenna	600 – 3000 MHz	2.00dBi(Max.)

Note :GSM&WCDMA<E Module 2 references the conduction test data of GSM&WCDMA<E Module 1.

4. Conducted Power Results

Antenna 9:

2.4GWLAN

Mode	Channel	Frequency (MHz)	Peak Conducted Output Power (dBm)
802.11b	01	2412	15.60
	06	2437	15.61
	11	2462	15.97
802.11g	01	2412	15.58
	06	2437	15.31
	11	2462	15.36
802.11n(HT20)	01	2412	13.70
	06	2437	13.31
	11	2462	13.36
802.11n(HT40)	03	2422	13.50
	06	2437	13.02
	09	2452	13.67
802.11ax(HT20)	01	2412	13.92
	06	2437	13.44
	11	2462	13.99
802.11ax(HT40)	03	2422	13.15
	06	2437	13.75
	09	2452	13.33

Antenna 10:

2.4GWLAN

Mode	Channel	Frequency (MHz)	Peak Conducted Output Power (dBm)
802.11b	01	2412	15.10
	06	2437	15.09
	11	2462	15.88
802.11g	01	2412	15.93
	06	2437	15.47
	11	2462	15.30
802.11n(HT20)	01	2412	13.02
	06	2437	13.78
	11	2462	13.05
802.11n(HT40)	03	2422	13.32
	06	2437	13.63
	09	2452	13.13
802.11ax(HT20)	01	2412	13.99
	06	2437	13.35
	11	2462	13.80
802.11ax(HT40)	03	2422	13.26
	06	2437	13.42
	09	2452	13.91

Antenna 11:**2.4GWLAN**

Mode	Channel	Frequency (MHz)	Peak Conducted Output Power (dBm)
802.11b	01	2412	15.28
	06	2437	15.41
	11	2462	15.97
802.11g	01	2412	15.07
	06	2437	15.40
	11	2462	15.91
802.11n(HT20)	01	2412	13.63
	06	2437	13.05
	11	2462	13.25
802.11n(HT40)	03	2422	13.71
	06	2437	13.98
	09	2452	13.19
802.11ax(HT20)	01	2412	13.62
	06	2437	13.25
	11	2462	13.93
802.11ax(HT40)	03	2422	13.26
	06	2437	13.65
	09	2452	13.77

Antenna 12:**2.4GWLAN**

Mode	Channel	Frequency (MHz)	Peak Conducted Output Power (dBm)
802.11b	01	2412	15.25
	06	2437	15.17
	11	2462	15.99
802.11g	01	2412	15.64
	06	2437	15.86
	11	2462	15.24
802.11n(HT20)	01	2412	13.09
	06	2437	13.41
	11	2462	13.54
802.11n(HT40)	03	2422	13.95
	06	2437	13.94
	09	2452	13.14
802.11ax(HT20)	01	2412	13.78
	06	2437	13.59
	11	2462	13.95
802.11ax(HT40)	03	2422	13.17
	06	2437	13.14
	09	2452	13.13

Antenna 5:**5.2GWLAN**

Mode	Channel	Frequency (MHz)	Average Conducted Output Power (dBm)
802.11a	36	5180	14.78
	40	5200	14.38
	48	5240	14.86
802.11n20	36	5180	13.68
	40	5200	13.46
	48	5240	13.71
802.11ac20	36	5180	13.33
	40	5200	13.63
	48	5240	13.24
802.11n40	38	5190	13.36
	46	5230	13.86
802.11ac40	38	5190	13.58
	46	5230	13.23
802.11ac80	42	5210	13.24
802.11ax20	36	5180	13.96
	40	5200	13.18
	48	5240	13.28
802.11ax40	38	5190	13.3
	46	5230	13.75
802.11ax80	42	5210	13.54

Antenna 6:**5.2GWLAN**

Mode	Channel	Frequency (MHz)	Average Conducted Output Power (dBm)
802.11a	36	5180	14.18
	40	5200	14.17
	48	5240	14.59
802.11n20	36	5180	13.20
	40	5200	13.51
	48	5240	13.63
802.11ac20	36	5180	13.27
	40	5200	13.02
	48	5240	13.78
802.11n40	38	5190	13.43
	46	5230	13.74
802.11ac40	38	5190	13.05
	46	5230	13.08
802.11ac80	42	5210	13.44
802.11ax20	36	5180	13.27
	40	5200	13.14
	48	5240	13.16
802.11ax40	38	5190	13.55
	46	5230	13.59
802.11ax80	42	5210	13.55

Antenna 7:**5.2GWLAN**

Mode	Channel	Frequency (MHz)	Average Conducted Output Power (dBm)
802.11a	36	5180	14.84
	40	5200	14.23
	48	5240	14.16
802.11n20	36	5180	13.66
	40	5200	13.24
	48	5240	13.59
802.11ac20	36	5180	13.94
	40	5200	13.51
	48	5240	13.44
802.11n40	38	5190	13.49
	46	5230	13.43
802.11ac40	38	5190	13.16
	46	5230	13.76
802.11ac80	42	5210	13.62
802.11ax20	36	5180	13.65
	40	5200	13.68
	48	5240	13.71
802.11ax40	38	5190	13.66
	46	5230	13.77
802.11ax80	42	5210	13.74

Antenna 8:**5.2GWLAN**

Mode	Channel	Frequency (MHz)	Average Conducted Output Power (dBm)
802.11a	36	5180	14.93
	40	5200	14.43
	48	5240	15.04
802.11n20	36	5180	13.52
	40	5200	13.48
	48	5240	13.32
802.11ac20	36	5180	13.60
	40	5200	13.69
	48	5240	13.48
802.11n40	38	5190	13.70
	46	5230	13.77
802.11ac40	38	5190	13.38
	46	5230	13.30
802.11ac80	42	5210	13.66
802.11ax20	36	5180	13.08
	40	5200	13.71
	48	5240	13.51
802.11ax40	38	5190	13.82
	46	5230	13.62
802.11ax80	42	5210	13.47

Antenna 1:**5.8GWLAN**

Mode	Channel	Frequency (MHz)	Average Conducted Output Power (dBm)
802.11a	149	5745	14.65
	157	5785	14.39
	165	5825	14.04
802.11n20	149	5745	13.10
	157	5785	13.82
	165	5825	13.49
802.11ac20	149	5745	13.98
	157	5785	13.21
	165	5825	13.46
802.11n40	151	5755	13.49
	159	5795	13.54
802.11ac40	151	5755	13.49
	159	5795	13.36
802.11ac80	155	5775	13.25
802.11ax20	149	5745	13.04
	157	5785	13.29
	165	5825	13.84
802.11ax40	151	5755	13.29
	159	5795	13.37
802.11ax80	155	5775	13.54

Antenna 2:**5.8GWLAN**

Mode	Channel	Frequency (MHz)	Average Conducted Output Power (dBm)
802.11a	149	5745	14.96
	157	5785	14.62
	165	5825	14.57
802.11n20	149	5745	13.90
	157	5785	13.91
	165	5825	13.40
802.11ac20	149	5745	13.43
	157	5785	13.64
	165	5825	13.83
802.11n40	151	5755	13.75
	159	5795	13.49
802.11ac40	151	5755	13.30
	159	5795	13.32
802.11ac80	155	5775	13.53
802.11ax20	149	5745	13.33
	157	5785	13.09
	165	5825	13.40
802.11ax40	151	5755	13.79
	159	5795	13.76
802.11ax80	155	5775	13.67

Antenna 3:**5.8GWLAN**

Mode	Channel	Frequency (MHz)	Average Conducted Output Power (dBm)
802.11a	149	5745	14.92
	157	5785	14.86
	165	5825	14.57
802.11n20	149	5745	13.86
	157	5785	13.85
	165	5825	13.51
802.11ac20	149	5745	13.33
	157	5785	13.94
	165	5825	13.82
802.11n40	151	5755	13.97
	159	5795	13.37
802.11ac40	151	5755	13.79
	159	5795	13.11
802.11ac80	155	5775	13.74
802.11ax20	149	5745	13.95
	157	5785	13.88
	165	5825	13.04
802.11ax40	151	5755	13.83
	159	5795	13.12
802.11ax80	155	5775	13.59

Antenna 4:**5.8GWLAN**

Mode	Channel	Frequency (MHz)	Average Conducted Output Power (dBm)
802.11a	149	5745	14.49
	157	5785	14.72
	165	5825	14.53
802.11n20	149	5745	13.04
	157	5785	13.66
	165	5825	13.27
802.11ac20	149	5745	13.31
	157	5785	13.03
	165	5825	13.05
802.11n40	151	5755	13.92
	159	5795	13.10
802.11ac40	151	5755	13.27
	159	5795	13.37
802.11ac80	155	5775	13.54
802.11ax20	149	5745	13.82
	157	5785	13.78
	165	5825	13.67
802.11ax40	151	5755	13.55
	159	5795	13.65
802.11ax80	155	5775	13.47

External Antenna (module 1) :
GSM&WCDMA<E ANT:

<GSM Max Conducted Power>

Test Mode		Channel	Frequency (MHz)	Max Conducted Power (dBm)
GSM 900		LCH	824.2	32.57
		MCH	836.6	32.59
		HCH	848.8	32.59
GSM 1800		LCH	1850.2	29.58
		MCH	1880.0	29.58
		HCH	1909.8	29.59

<WCDMA Max Conducted Power>

Test Mode		Channel	Frequency (MHz)	Max Conducted Power (dBm)
WCDMA	Band 2	LCH	1852.4	23.55
		MCH	1880.0	23.53
		HCH	1907.6	23.61
WCDMA	Band 4	LCH	1712.4	23.52
		MCH	1732.6	23.49
		HCH	1752.6	23.54
WCDMA	Band 5	LCH	826.4	22.20
		MCH	836.6	22.13
		HCH	846.6	22.57

<LTE Max Conducted Power>

Test Mode		Channel	Frequency (MHz)	Max Conducted Power (dBm)
LTE	Band 2	LCH	1850.7	23.43
		MCH	1880.0	23.38
		HCH	1909.3	23.49
	Band 4	LCH	1710.7	23.43
		MCH	1732.5	23.30
		HCH	1754.3	23.46
	Band 5	LCH	824.7	23.34
		MCH	836.5	23.14
		HCH	848.3	23.13
	Band 7	LCH	2502.5	23.08
		MCH	2535.0	23.16
		HCH	2567.5	23.27
	Band 12	LCH	699.7	23.24
		MCH	707.5	23.17
		HCH	715.3	23.27
	Band 13	LCH	779.5	23.29
		MCH	782.0	23.36
		HCH	784.5	23.21
	Band 25	LCH	1850.7	23.47
		MCH	1882.5	23.49
		HCH	1914.3	23.26
	Band 26(814-824MHz)	LCH	814.7	23.24
		MCH	819.0	23.20
		HCH	823.3	23.18
	Band 26(824-849MHz)	LCH	824.7	22.82
		MCH	836.5	22.81
		HCH	848.30	22.86
	Band 38	LCH	2572.5	23.27
		MCH	2595.0	23.27
		HCH	2617.5	23.14
	Band 41	LCH	2498.5	23.28
		MCH	2593.0	23.16
		HCH	2687.5	23.27

Internal Antenna (module 2) :
GSM&WCDMA<E ANT:

<GSM Max Conducted Power>

Test Mode		Channel	Frequency (MHz)	Max Conducted Power (dBm)
GSM 900		LCH	824.2	32.57
		MCH	836.6	32.59
		HCH	848.8	32.59
GSM 1800		LCH	1850.2	29.58
		MCH	1880.0	29.58
		HCH	1909.8	29.59

<WCDMA Max Conducted Power>

Test Mode		Channel	Frequency (MHz)	Max Conducted Power (dBm)
WCDMA	Band 2	LCH	1852.4	23.55
		MCH	1880.0	23.53
		HCH	1907.6	23.61
WCDMA	Band 4	LCH	1712.4	23.52
		MCH	1732.6	23.49
		HCH	1752.6	23.54
WCDMA	Band 5	LCH	826.4	22.20
		MCH	836.6	22.13
		HCH	846.6	22.57

<LTE Max Conducted Power>

Test Mode		Channel	Frequency (MHz)	Max Conducted Power (dBm)
LTE	Band 2	LCH	1850.7	23.43
		MCH	1880.0	23.38
		HCH	1909.3	23.49
	Band 4	LCH	1710.7	23.43
		MCH	1732.5	23.30
		HCH	1754.3	23.46
	Band 5	LCH	824.7	23.34
		MCH	836.5	23.14
		HCH	848.3	23.13
	Band 7	LCH	2502.5	23.08
		MCH	2535.0	23.16
		HCH	2567.5	23.27
	Band 12	LCH	699.7	23.24
		MCH	707.5	23.17
		HCH	715.3	23.27
	Band 13	LCH	779.5	23.29
		MCH	782.0	23.36
		HCH	784.5	23.21
	Band 25	LCH	1850.7	23.47
		MCH	1882.5	23.49
		HCH	1914.3	23.26
	Band 26(814-824MHz)	LCH	814.7	23.24
		MCH	819.0	23.20
		HCH	823.3	23.18
	Band 26(824-849MHz)	LCH	824.7	22.82
		MCH	836.5	22.81
		HCH	848.30	22.86
	Band 38	LCH	2572.5	23.27
		MCH	2595.0	23.27
		HCH	2617.5	23.14
	Band 41	LCH	2498.5	23.28
		MCH	2593.0	23.16
		HCH	2687.5	23.27

5. Manufacturing Tolerance

Antenna 9:

2.4GWLAN

IEEE 802.11b (Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	15.0	15.0	15.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11g (Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	15.0	15.0	15.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n HT40 (Peak)			
Channel	Channel 03	Channel 06	Channel 09
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ax HT20 (Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ax HT40 (Peak)			
Channel	Channel 03	Channel 06	Channel 09
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0

Antenna 10:

2.4GWLAN

IEEE 802.11b (Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	15.0	15.0	15.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11g (Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	15.0	15.0	15.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n HT40 (Peak)			
Channel	Channel 03	Channel 06	Channel 09
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ax HT20 (Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ax HT40 (Peak)			
Channel	Channel 03	Channel 06	Channel 09
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0

Antenna 11:**2.4GWLAN**

IEEE 802.11b (Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	15.0	15.0	15.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11g (Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	15.0	15.0	15.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n HT40 (Peak)			
Channel	Channel 03	Channel 06	Channel 09
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ax HT20 (Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ax HT40 (Peak)			
Channel	Channel 03	Channel 06	Channel 09
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0

Antenna 12:**2.4GWLAN**

IEEE 802.11b (Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	15.0	15.0	15.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11g (Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	15.0	15.0	15.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n HT40 (Peak)			
Channel	Channel 03	Channel 06	Channel 09
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ax HT20 (Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ax HT40 (Peak)			
Channel	Channel 03	Channel 06	Channel 09
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0

Antenna 5:**5.2GWLAN**

IEEE 802.11a (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	14.0	14.0	14.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ac VHT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n VHT40 (Average)			
Channel	Channel 38	Channel 46	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ac VHT40 (Average)			
Channel	Channel 38	Channel 46	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ac VHT80 (Average)			
Channel	Channel 42	/	/
Target (dBm)	13.0	/	/
Tolerance $\pm$ (dB)	1.0	/	/
IEEE 802.11ax VHT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ax VHT40 (Average)			
Channel	Channel 38	Channel 46	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ax VHT80 (Average)			
Channel	Channel 42	/	/
Target (dBm)	13.0	/	/
Tolerance $\pm$ (dB)	1.0	/	/

Antenna 6:

5.2G WLAN

IEEE 802.11a (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	14.0	14.0	14.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ac VHT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n VHT40 (Average)			
Channel	Channel 38	Channel 46	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ac VHT40 (Average)			
Channel	Channel 38	Channel 46	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ac VHT80 (Average)			
Channel	Channel 42	/	/
Target (dBm)	13.0	/	/
Tolerance $\pm$ (dB)	1.0	/	/
IEEE 802.11ax VHT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ax VHT40 (Average)			
Channel	Channel 38	Channel 46	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ax VHT80 (Average)			
Channel	Channel 42	/	/
Target (dBm)	13.0	/	/
Tolerance $\pm$ (dB)	1.0	/	/

Antenna 7:

5.2GWLAN

IEEE 802.11a (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	14.0	14.0	14.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ac VHT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n VHT40 (Average)			
Channel	Channel 38	Channel 46	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ac VHT40 (Average)			
Channel	Channel 38	Channel 46	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ac VHT80 (Average)			
Channel	Channel 42	/	/
Target (dBm)	13.0	/	/
Tolerance $\pm$ (dB)	1.0	/	/
IEEE 802.11ax VHT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ax VHT40 (Average)			
Channel	Channel 38	Channel 46	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ax VHT80 (Average)			
Channel	Channel 42	/	/
Target (dBm)	13.0	/	/
Tolerance $\pm$ (dB)	1.0	/	/

Antenna 8:**5.2GWLAN**

IEEE 802.11a (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	14.0	14.0	15.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ac VHT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n VHT40 (Average)			
Channel	Channel 38	Channel 46	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ac VHT40 (Average)			
Channel	Channel 38	Channel 46	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ac VHT80 (Average)			
Channel	Channel 42	/	/
Target (dBm)	13.0	/	/
Tolerance $\pm$ (dB)	1.0	/	/
IEEE 802.11ax VHT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ax VHT40 (Average)			
Channel	Channel 38	Channel 46	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ax VHT80 (Average)			
Channel	Channel 42	/	/
Target (dBm)	13.0	/	/
Tolerance $\pm$ (dB)	1.0	/	/

Antenna 1:**5.8G WLAN**

IEEE 802.11a (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	15.0	15.0	15.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ac VHT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n VHT40 (Average)			
Channel	Channel 151	Channel 159	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ac VHT40 (Average)			
Channel	Channel 151	Channel 159	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ac VHT80 (Average)			
Channel	Channel 155	/	/
Target (dBm)	13.0	/	/
Tolerance $\pm$ (dB)	1.0	/	/
IEEE 802.11ax VHT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ax VHT40 (Average)			
Channel	Channel 151	Channel 159	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ax VHT80 (Average)			
Channel	Channel 155	/	/
Target (dBm)	13.0	/	/
Tolerance $\pm$ (dB)	1.0	/	/

Antenna 2:**5.8G WLAN**

IEEE 802.11a (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	14.0	14.0	14.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ac VHT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n VHT40 (Average)			
Channel	Channel 151	Channel 159	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ac VHT40 (Average)			
Channel	Channel 151	Channel 159	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ac VHT80 (Average)			
Channel	Channel 155	/	/
Target (dBm)	13.0	/	/
Tolerance $\pm$ (dB)	1.0	/	/
IEEE 802.11ax VHT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ax VHT40 (Average)			
Channel	Channel 151	Channel 159	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ax VHT80 (Average)			
Channel	Channel 155	/	/
Target (dBm)	13.0	/	/
Tolerance $\pm$ (dB)	1.0	/	/

Antenna 3:**5.8G WLAN**

IEEE 802.11a (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	14.0	14.0	14.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ac VHT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n VHT40 (Average)			
Channel	Channel 151	Channel 159	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ac VHT40 (Average)			
Channel	Channel 151	Channel 159	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ac VHT80 (Average)			
Channel	Channel 155	/	/
Target (dBm)	13.0	/	/
Tolerance $\pm$ (dB)	1.0	/	/
IEEE 802.11ax VHT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ax VHT40 (Average)			
Channel	Channel 151	Channel 159	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ax VHT80 (Average)			
Channel	Channel 155	/	/
Target (dBm)	13.0	/	/
Tolerance $\pm$ (dB)	1.0	/	/

Antenna 4:

5.8GWLAN

IEEE 802.11a (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	14.0	14.0	14.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ac VHT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n VHT40 (Average)			
Channel	Channel 151	Channel 159	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ac VHT40 (Average)			
Channel	Channel 151	Channel 159	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ac VHT80 (Average)			
Channel	Channel 155	/	/
Target (dBm)	13.0	/	/
Tolerance $\pm$ (dB)	1.0	/	/
IEEE 802.11ax VHT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	13.0	13.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11ax VHT40 (Average)			
Channel	Channel 151	Channel 159	/
Target (dBm)	13.0	13.0	/
Tolerance $\pm$ (dB)	1.0	1.0	/
IEEE 802.11ax VHT80 (Average)			
Channel	Channel 155	/	/
Target (dBm)	13.0	/	/
Tolerance $\pm$ (dB)	1.0	/	/

External Antenna (module 1) :
GSM&WCDMA<E ANT:

GSM

Mode	Target Power
GSM 900	32 ± 1.0 dBm
GSM 1800	29 ± 1.0 dBm

WCDMA

Mode	WCDMA Band II	WCDMA Band IV	WCDMA Band V
RMC	23.0 ± 1 dBm	23.0 ± 1 dBm	22.0 ± 1 dBm

LTE

Mode	Target Power
LTE BAND 2	23 ± 1.0 dBm
LTE BAND 4	23 ± 1.0 dBm
LTE BAND 5	23 ± 1.0 dBm
LTE BAND 7	23 ± 1.0 dBm
LTE BAND 12	23 ± 1.0 dBm
LTE BAND 13	23 ± 1.0 dBm
LTE BAND 25	23 ± 1.0 dBm
LTE BAND 26(814-824MHz)	23 ± 1.0 dBm
LTE BAND 26(824-849MHz)	22 ± 1.0 dBm
LTE BAND 38	23 ± 1.0 dBm
LTE BAND 41	23 ± 1.0 dBm

Internal Antenna (module 2) :
GSM&WCDMA<E ANT:

GSM

Mode	Target Power
GSM 900	32 ± 1.0 dBm
GSM 1800	29 ± 1.0 dBm

WCDMA

Mode	WCDMA Band II	WCDMA Band IV	WCDMA Band V
RMC	23.0 ± 1 dBm	23.0 ± 1 dBm	22.0 ± 1 dBm

LTE

Mode	Target Power
LTE BAND 2	23 ± 1.0 dBm
LTE BAND 4	23 ± 1.0 dBm
LTE BAND 5	23 ± 1.0 dBm
LTE BAND 7	23 ± 1.0 dBm
LTE BAND 12	23 ± 1.0 dBm
LTE BAND 13	23 ± 1.0 dBm
LTE BAND 25	23 ± 1.0 dBm
LTE BAND 26(814-824MHz)	23 ± 1.0 dBm
LTE BAND 26(824-849MHz)	22 ± 1.0 dBm
LTE BAND 38	23 ± 1.0 dBm
LTE BAND 41	23 ± 1.0 dBm

6. Measurement Results

6.1 Standalone MPE Evaluation

As declared by the Applicant, the EUT is a wireless device used in a fix application, at least 50 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum separation distance, $r = 50\text{cm}$, as well as the gain of the used antenna refer to antenna information, the RF power density can be obtained.

Antenna 9:

2.4GWLAN

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW				
802.11b	16.00	39.8107	2.00	1.5849	0.0020	1.0000
802.11g	16.00	39.8107	2.00	1.5849	0.0020	1.0000
802.11n(HT20)	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11n(HT40)	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax(HT20)	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax(HT40)	14.00	25.1189	2.00	1.5849	0.0013	1.0000

Antenna 10:

2.4GWLAN

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW				
802.11b	16.00	39.8107	2.00	1.5849	0.0020	1.0000
802.11g	16.00	39.8107	2.00	1.5849	0.0020	1.0000
802.11n(HT20)	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11n(HT40)	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax(HT20)	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax(HT40)	14.00	25.1189	2.00	1.5849	0.0013	1.0000

Antenna 11:

2.4GWLAN

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW				
802.11b	16.00	39.8107	2.00	1.5849	0.0020	1.0000
802.11g	16.00	39.8107	2.00	1.5849	0.0020	1.0000
802.11n(HT20)	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11n(HT40)	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax(HT20)	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax(HT40)	14.00	25.1189	2.00	1.5849	0.0013	1.0000

Antenna 12:**2.4GWLAN**

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW				
802.11b	16.00	39.8107	2.00	1.5849	0.0020	1.0000
802.11g	16.00	39.8107	2.00	1.5849	0.0020	1.0000
802.11n(HT20)	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11n(HT40)	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax(HT20)	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax(HT40)	14.00	25.1189	2.00	1.5849	0.0013	1.0000

Antenna 5:**5.2GWLAN**

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW				
802.11a	15.00	31.6228	2.00	1.5849	0.0016	1.0000
802.11n20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11n40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac80	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax80	14.00	25.1189	2.00	1.5849	0.0013	1.0000

Antenna 6:**5.2GWLAN**

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW				
802.11a	15.00	31.6228	2.00	1.5849	0.0016	1.0000
802.11n20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11n40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac80	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax80	14.00	25.1189	2.00	1.5849	0.0013	1.0000

Antenna 7:**5.2GWLAN**

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW				
802.11a	15.00	31.6228	2.00	1.5849	0.0016	1.0000
802.11n20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11n40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac80	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax80	14.00	25.1189	2.00	1.5849	0.0013	1.0000

Antenna 8:**5.2GWLAN**

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW				
802.11a	16.00	39.8107	2.00	1.5849	0.0020	1.0000
802.11n20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11n40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac80	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax80	14.00	25.1189	2.00	1.5849	0.0013	1.0000

Antenna 1:**5.8GWLAN**

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW				
802.11a	16.00	39.8107	2.00	1.5849	0.0020	1.0000
802.11n20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11n40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac80	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax80	14.00	25.1189	2.00	1.5849	0.0013	1.0000

Antenna 2:**5.8GWLAN**

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW				
802.11a	15.00	31.6228	2.00	1.5849	0.0016	1.0000
802.11n20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11n40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac80	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax80	14.00	25.1189	2.00	1.5849	0.0013	1.0000

Antenna 3:**5.8GWLAN**

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW				
802.11a	15.00	31.6228	2.00	1.5849	0.0016	1.0000
802.11n20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11n40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac80	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax80	14.00	25.1189	2.00	1.5849	0.0013	1.0000

Antenna 4:**5.8GWLAN**

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW				
802.11a	15.00	31.6228	2.00	1.5849	0.0016	1.0000
802.11n20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11n40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ac80	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax20	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax40	14.00	25.1189	2.00	1.5849	0.0013	1.0000
802.11ax80	14.00	25.1189	2.00	1.5849	0.0013	1.0000

External Antenna (module 1) :**GSM&WCDMA<E**

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW				
GSM 900	33.00	1995.2623	0	1.0000	0.0635	0.5493
GSM 1800	30.00	1000.0000	0	1.0000	0.0318	1.0000
WCDMA Band II	24.00	251.1886	1.00	1.2589	0.0101	1.0000
WCDMA Band IV	24.00	251.1886	1.00	1.2589	0.0101	1.0000
WCDMA Band V	23.00	199.5262	1.00	1.2589	0.0080	0.5493
LTE Band 2	24.00	251.1886	2.00	1.5849	0.0127	1.0000
LTE Band 4	24.00	251.1886	2.00	1.5849	0.0127	1.0000
LTE Band 5	24.00	251.1886	2.00	1.5849	0.0127	0.5493
LTE Band 7	24.00	251.1886	2.00	1.5849	0.0127	1.0000
LTE Band 12	24.00	251.1886	2.00	1.5849	0.0127	0.4660
LTE Band 13	24.00	251.1886	2.00	1.5849	0.0127	0.5180
LTE Band 25	24.00	251.1886	2.00	1.5849	0.0127	1.0000
LTE Band 26(814-824MHz)	24.00	251.1886	2.00	1.5849	0.0127	0.5427
LTE Band 26(824-849MHz)	23.00	199.5262	2.00	1.5849	0.0101	0.5493
LTE Band 38	24.00	251.1886	2.00	1.5849	0.0127	1.0000
LTE Band 41	24.00	251.1886	2.00	1.5849	0.0127	1.0000

Internal Antenna (module 2) :**GSM&WCDMA<E**

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW				
GSM 900	33.00	1995.2623	0	1.0000	0.0635	0.5493
GSM 1800	30.00	1000.0000	0	1.0000	0.0318	1.0000
WCDMA Band II	24.00	251.1886	1.00	1.2589	0.0101	1.0000
WCDMA Band IV	24.00	251.1886	1.00	1.2589	0.0101	1.0000
WCDMA Band V	23.00	199.5262	1.00	1.2589	0.0080	0.5493
LTE Band 2	24.00	251.1886	2.00	1.5849	0.0127	1.0000
LTE Band 4	24.00	251.1886	2.00	1.5849	0.0127	1.0000
LTE Band 5	24.00	251.1886	2.00	1.5849	0.0127	0.5493
LTE Band 7	24.00	251.1886	2.00	1.5849	0.0127	1.0000
LTE Band 12	24.00	251.1886	2.00	1.5849	0.0127	0.4660
LTE Band 13	24.00	251.1886	2.00	1.5849	0.0127	0.5180
LTE Band 25	24.00	251.1886	2.00	1.5849	0.0127	1.0000
LTE Band 26(814-824MHz)	24.00	251.1886	2.00	1.5849	0.0127	0.5427
LTE Band 26(824-849MHz)	23.00	199.5262	2.00	1.5849	0.0101	0.5493
LTE Band 38	24.00	251.1886	2.00	1.5849	0.0127	1.0000
LTE Band 41	24.00	251.1886	2.00	1.5849	0.0127	1.0000

Remark:

1. Output power including tune-up tolerance;
2. MPE evaluate distance is 20cm from user manual provide by manufacturer;

6.2 Simultaneous Transmission MPE

The sample support one Bluetooth & WLAN modular and one Bluetooth antenna, and two WLAN antennas, WLAN support MIMO, Need consider simultaneous transmission ;

The sample supports 4T4R MIMO technology for WLAN.

According to KDB447498 for Transmitters used in mobile exposure conditions for simultaneous transmission operations;

$\sum$ of MPE ratios ≤ 1.0

8.2.1 Summary simultaneous transmission information

Modulation Type	Work Frequency Band	Transmit Antenna				Antenna 9 Antenna 10 Antenna 11 Antenna 12 Synchronization transmit
		Ant 9	Ant 10	Ant 11	Ant 12	
802.11b	2.4G WLAN	Yes	Yes	Yes	Yes	No
802.11g	2.4G WLAN	Yes	Yes	Yes	Yes	No
802.11n(HT20)	2.4G WLAN	Yes	Yes	Yes	Yes	Yes
802.11n(HT40)	2.4G WLAN	Yes	Yes	Yes	Yes	Yes
802.11ax(HT20)	2.4G WLAN	Yes	Yes	Yes	Yes	Yes
802.11ax(HT40)	2.4G WLAN	Yes	Yes	Yes	Yes	Yes

Modulation Type	Work Frequency Band	Transmit Antenna				Antenna 5 Antenna 6 Antenna 7 Antenna 8 Synchronization transmit
		Ant 5	Ant 6	Ant 7	Ant 8	
802.11a	UNII Band 1	Yes	Yes	Yes	Yes	No
802.11n20	UNII Band 1	Yes	Yes	Yes	Yes	Yes
802.11ac20	UNII Band 1	Yes	Yes	Yes	Yes	Yes
802.11n40	UNII Band 1	Yes	Yes	Yes	Yes	Yes
802.11ac40	UNII Band 1	Yes	Yes	Yes	Yes	Yes
802.11ac80	UNII Band 1	Yes	Yes	Yes	Yes	Yes
802.11ax20	UNII Band 1	Yes	Yes	Yes	Yes	Yes
802.11ax40	UNII Band 1	Yes	Yes	Yes	Yes	Yes
802.11ax80	UNII Band 1	Yes	Yes	Yes	Yes	Yes

Modulation Type	Work Frequency Band	Transmit Antenna				Antenna 1 Antenna 2 Antenna 3 Antenna 4 Synchronization transmit
		Ant 1	Ant 2	Ant 3	Ant 4	
802.11a	UNII Band 3	Yes	Yes	Yes	Yes	No
802.11n20	UNII Band 3	Yes	Yes	Yes	Yes	Yes
802.11ac20	UNII Band 3	Yes	Yes	Yes	Yes	Yes
802.11n40	UNII Band 3	Yes	Yes	Yes	Yes	Yes
802.11ac40	UNII Band 3	Yes	Yes	Yes	Yes	Yes
802.11ac80	UNII Band 3	Yes	Yes	Yes	Yes	Yes
802.11ax20	UNII Band 3	Yes	Yes	Yes	Yes	Yes
802.11ax40	UNII Band 3	Yes	Yes	Yes	Yes	Yes
802.11ax80	UNII Band 3	Yes	Yes	Yes	Yes	Yes

8.2.2 Summary simultaneous transmission results

Maximum Simultaneous transmission MPE Ratios for **Antenna 11, Antenna 2, Antenna 3, Antenna 4, Antenna 5, Antenna 6, Antenna 7, Antenna 8, Antenna 9, Antenna 10, Antenna 11, Antenna 12, GSM 900 (module 1), GSM 900 (module 2).**

Maximum MPE ratio Ant. 1	Maximum MPE ratio Ant. 2	Maximum MPE ratio Ant. 3	Maximum MPE ratio Ant. 4	Maximum MPE ratio Ant. 5	Maximum MPE ratio Ant. 6	Σ MPE Ratios (Ant1- Ant6)	Limit	Results
0.0020	0.0016	0.0016	0.0016	0.0016	0.0016	0.0100	1.0	PASS

Maximum MPE ratio Ant. 7	Maximum MPE ratio Ant. 8	Maximum MPE ratio Ant. 9	Maximum MPE ratio Ant. 10	Maximum MPE ratio Ant. 11	Maximum MPE ratio Ant. 12	Σ MPE Ratios (Ant7- Ant12)	Limit	Results
0.0016	0.0020	0.0020	0.0020	0.0020	0.0020	0.0116	1.0	PASS

Maximum MPE ratio (Ant1- Ant6)	Maximum MPE ratio (Ant7- Ant12)	Maximum MPE ratio (Ant13 GSM900 module 1)	Maximum MPE ratio (Ant14 GSM900 module 2)	Σ MPE ratios	Limit	Results
0.0100	0.0116	0.1156	0.1156	0.2528	1.0	PASS

7. Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure and SAR Exclusion Threshold per KDB 447498 v06, No SAR is required.

.....**End of Report**.....