REPORT No.：SZ18020069S01

RF EXPOSURE EVALUATION REPORT

APPLICANT	:	Amino Communications Ltd
PRODUCT NAME	:	HD IPTV Receiver
MODEL NAME	:	Amigo 7X (main test model) Amigo 7XYEzzzzzzzz (X,Y, can be 0~9; zzzzzzzz can be combination of A~Z, a~z, 0~9, “- “, “/ “,” blank” for marketing purpose)
BRAND NAME	:	Amino
FCC ID	:	XVG50-0112-RT-22
STANDARD(S)	:	47CFR 2.1091 KDB 447498 D01 General RF Exposure Guidance v06
ISSUE DATE	:	2018-05-17

Tested by: Gan Yueming

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MORLAB

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Change History		
Issue	**Date**	**Reason for change**
1.0	2018-05-17	First edition

1. Technical Information

Note: Provide by manufacturer.

1.1. Applicant and Manufacturer Information

Applicant:	Amino Communications Ltd
Applicant Address:	Buckingway Business Park, Anderson Road, Swavesey, Cambridge CB24 4UQ United Kingdom
Manufacturer:	Amino Communications Ltd
Manufacturer Address:	Buckingway Business Park, Anderson Road, Swavesey, Cambridge CB24 4UQ United Kingdom

1.2. Equipment Under Test (EUT) Description

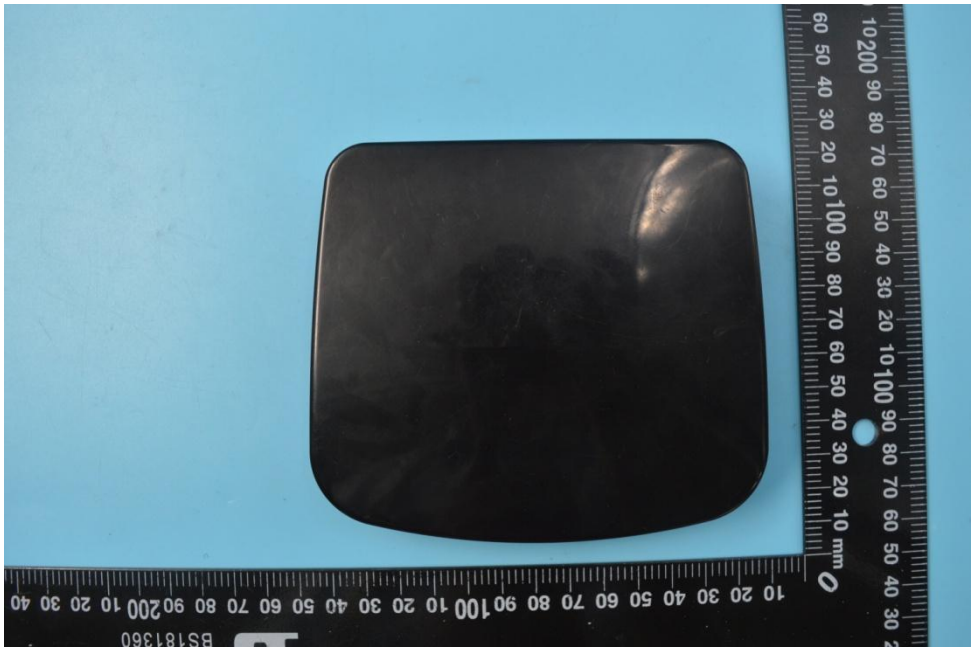
EUT Type:	HD IPTV Receiver
Hardware Version:	V1.0
Software Version:	190118
Frequency Bands:	WLAN 2.4GHz: 2412 MHz ~ 2462 MHz WLAN 5.2GHz: 5150 MHz ~ 5250 MHz WLAN 5.3GHz: 5250 MHz ~ 5350 MHz WLAN 5.5GHz: 5470 MHz ~ 5725 MHz WLAN 5.8GHz: 5725 MHz ~ 5850 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Modulation Mode:	802.11b/g/n HT20/HT40 802.11a/n HT20/HT40 802.11ac VHT40/VHT80 Bluetooth 2.1+EDR Bluetooth 4.0 - LE
Antenna type:	FPC Antenna

Note:

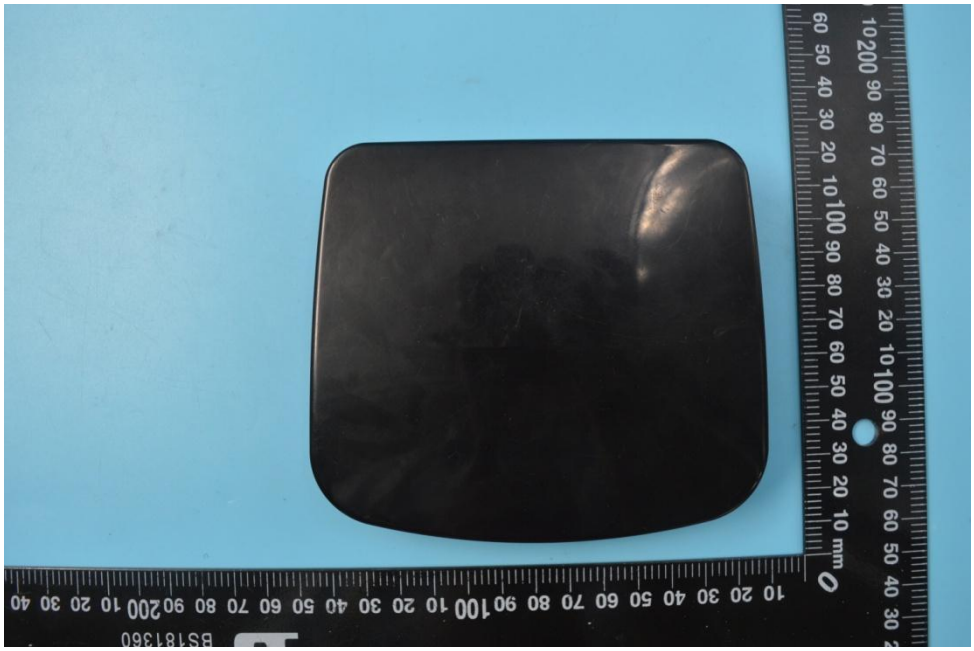
According to the certificate holder, Amino Communications Ltd, they declared that: Amigo 7XYEzzzzzzzz (X,Y, can be 0~9; zzzzzzzz can be combination of A~Z, a~z, 0~9, “-”, “/”, “blank” for marketing purpose). Only the model name is different, The Bluetooth and WIFI module are the same. The main measuring model is Amigo 7X, only the results for PRO Amigo 7X were recorded in this report.

1.3. Photographs of the EUT

1. **EUT front view**



2. **EUT rear view**



1.4. Identification of all used EUT

The EUT identity consists of numerical and letter characters, the letter character indicates the test sample, and the following two numerical characters indicate the software version of the test sample.

EUT Identity	Hardware Version	Software Version
1#	V1.0	190118

1.5. Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	**47 CFR§2.1091**	Radiofrequency Radiation Exposure Evaluation: mobile devices
2	**KDB 447498 D01v06**	General RF Exposure Guidance

2. RF Exposure Limit

Per user manual, Based on 47CFR 2.1091, this device belongs to mobile device category with General Population/Uncontrolled exposure.

Mobile Devices:

47CFR 2.1091(b)

For purposes of this section, a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. In this context, the term “fixed location” means that the device is physically secured at one location and is not able to be easily moved to another location. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

GENERAL POPULATION / UNCONTROLLED EXPOSURE

The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category, and the general population/uncontrolled exposure limits apply to these devices.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	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. Measurement of Conducted Output Power

1. Bluetooth output power

Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
BR / EDR	CH 00	2402	3.56	4.61	5.24
	CH 39	2441	3.35	4.30	5.02
	CH 78	2480	2.07	2.93	3.58
Tune-up Limit			4	5	6

Mode	Channel	Frequency (MHz)	Peak power (dBm)
			GFSK
LE	CH 00	2402	1.58
	CH 19	2440	0.11
	CH 39	2480	-1.30
Tune-up Limit			2

2. WLAN output power

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit
2.4GHz WLAN ANT J3	802.11b 1Mbps	CH 1	2412	11.21	12.00
		CH 6	2437	10.20	11.00
		CH 11	2462	10.28	11.00
	802.11g 6Mbps	CH 1	2412	7.94	8.50
		CH 6	2437	7.67	8.50
		CH 11	2462	7.81	8.50
	802.11n-HT20 MCS0	CH 1	2412	7.69	8.00
		CH 6	2437	7.43	8.00
		CH 11	2462	7.51	8.00
	802.11n-HT40 MCS0	CH 3	2422	7.18	8.00
		CH 6	2437	6.89	7.50
		CH 9	2452	6.92	7.50

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit
2.4GHz WLAN ANT J4	802.11b 1Mbps	CH 1	2412	10.52	12.00
		CH 6	2437	10.41	11.00
		CH 11	2462	10.68	11.00
	802.11g 6Mbps	CH 1	2412	7.56	8.50
		CH 6	2437	7.68	8.50
		CH 11	2462	7.95	8.50
	802.11n-HT20 MCS0	CH 1	2412	7.27	8.00
		CH 6	2437	7.35	8.00
		CH 11	2462	7.39	8.00
	802.11n-HT40 MCS0	CH 3	2422	7.09	8.00
		CH 6	2437	6.96	7.50
		CH 9	2452	6.89	7.50

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit
2.4GHz WLAN ANT J3+ J4	802.11n-HT20 MCS0	CH 1	2412	14.96	15.50
		CH 6	2437	14.78	15.50
		CH 11	2462	14.90	15.50
	802.11n-HT40 MCS0	CH 3	2422	14.27	15.00
		CH 6	2437	13.85	14.50
		CH 9	2452	13.81	14.50

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit
5.2GHz WLAN ANT J3	802.11a 6Mbps	CH 36	5180	7.45	8.00
		CH 44	5220	6.52	7.00
		CH 48	5240	5.98	6.50
	802.11n-HT20 MCS0	CH 36	5180	4.99	5.50
		CH 44	5220	3.75	4.50
		CH 48	5240	4.89	5.00
	802.11n-HT40 MCS0	CH 38	5190	5.23	6.00
		CH 46	5230	4.56	5.00
	802.11ac-VHT20 MCS0	CH 36	5180	5.12	5.50
		CH 44	5220	4.34	5.00
		CH 48	5240	4.01	5.00
	802.11ac-VHT40 MCS0	CH 38	5190	5.19	6.00
		CH 46	5230	4.69	5.00
	802.11ac-VHT80 MCS0	CH 42	5210	6.32	7.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit
5.2GHz WLAN ANT J4	802.11a 6Mbps	CH 36	5180	8.81	9.00
		CH 44	5220	7.61	8.00
		CH 48	5240	7.01	8.00
	802.11n-HT20 MCS0	CH 36	5180	6.28	7.00
		CH 44	5220	4.87	5.50
		CH 48	5240	5.48	6.00
	802.11n-HT40 MCS0	CH 38	5190	5.36	6.00
		CH 46	5230	5.07	5.50
	802.11ac-VHT20 MCS0	CH 36	5180	6.45	7.00
		CH 44	5220	5.51	6.00
		CH 48	5240	5.16	6.00
	802.11ac-VHT40 MCS0	CH 38	5190	5.09	6.00
		CH 46	5230	5.52	6.00
	802.11ac-VHT80 MCS0	CH 42	5210	5.72	6.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit
5.2GHz WLAN ANT J3+ J4	802.11n-HT20 MCS0	CH 36	5180	11.27	12.00
		CH 44	5220	8.62	9.00
		CH 48	5240	10.37	11.00
	802.11n-HT40 MCS0	CH 38	5190	10.59	11.00
		CH 46	5230	9.63	10.54
	802.11ac-VHT20 MCS0	CH 36	5180	11.57	12.00
		CH 44	5220	9.85	10.50
		CH 48	5240	9.17	10.00
	802.11ac-VHT40 MCS0	CH 38	5190	10.28	11.00
		CH 46	5230	10.21	11.00
	802.11ac-VHT80 MCS0	CH 42	5210	12.04	13.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit
5.3GHz WLAN ANT J3	802.11a 6Mbps	CH 52	5260	4.24	5.00
		CH 60	5300	4.05	5.00
		CH 64	5320	3.56	4.00
	802.11n-HT20 MCS0	CH 52	5260	4.35	5.00
		CH 60	5300	4.02	5.00
		CH 64	5320	4.10	5.00
	802.11n-HT40 MCS0	CH 54	5270	3.45	4.00
		CH 62	5310	3.21	4.00
	802.11ac-VHT20 MCS0	CH 52	5260	3.43	4.00
		CH 60	5300	2.75	3.00
		CH 64	5320	3.24	4.00
	802.11ac-VHT40 MCS0	CH 54	5270	4.32	5.00
		CH 62	5310	3.41	4.00
	802.11ac-VHT80 MCS0	CH 58	5290	5.39	6.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit
5.3GHz WLAN ANT J4	802.11a 6Mbps	CH 52	5260	5.87	6.00
		CH 60	5300	5.26	6.00
		CH 64	5320	4.78	5.00
	802.11n-HT20 MCS0	CH 52	5260	4.67	5.00
		CH 60	5300	4.00	5.00
		CH 64	5320	4.05	5.00
	802.11n-HT40 MCS0	CH 54	5270	3.91	4.00
		CH 62	5310	3.26	4.00
	802.11ac-VHT20 MCS0	CH 52	5260	4.29	5.00
		CH 60	5300	3.78	4.50
		CH 64	5320	3.99	4.50
	802.11ac-VHT40 MCS0	CH 54	5270	4.28	5.00
		CH 62	5310	3.92	4.50
	802.11ac-VHT80 MCS0	CH 58	5290	3.45	4.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit
5.3GHz WLAN ANT J3+ J4	802.11n-HT20 MCS0	CH 52	5260	9.02	10.00
		CH 60	5300	8.02	9.00
		CH 64	5320	8.15	9.00
	802.11n-HT40 MCS0	CH 54	5270	7.36	8.00
		CH 62	5310	6.47	7.00
	802.11ac-VHT20 MCS0	CH 52	5260	7.72	8.00
		CH 60	5300	6.53	7.00
		CH 64	5320	7.23	8.00
	802.11ac-VHT40 MCS0	CH 54	5270	8.60	9.00
		CH 62	5310	7.33	8.00
	802.11ac-VHT80 MCS0	CH 58	5290	8.84	9.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit
5.5GHz WLAN ANT J3	802.11a 6Mbps	CH 100	5500	3.32	4.00
		CH 120	5600	3.47	4.00
		CH 144	5720	2.75	3.50
	802.11n-HT20 MCS0	CH 100	5500	3.06	4.00
		CH 120	5600	2.98	3.50
		CH 144	5720	2.22	3.00
	802.11n-HT40 MCS0	CH 102	5510	2.98	3.50
		CH 126	5630	3.15	4.00
		CH 142	5710	2.76	3.00
	802.11ac-VHT20 MCS0	CH 100	5500	2.73	3.00
		CH 120	5600	2.18	3.00
		CH 144	5720	2.45	3.00
	802.11ac-VHT40 MCS0	CH 102	5510	2.78	3.00
		CH 126	5630	2.99	3.50
		CH 142	5710	2.46	3.00
	802.11ac-VHT80 MCS0	CH 106	5530	3.69	4.00
		CH 122	5610	3.67	4.00
		CH 138	5690	3.48	4.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit
5.5GHz WLAN ANT J4	802.11a 6Mbps	CH 100	5500	4.43	5.00
		CH 120	5600	4.60	5.00
		CH 144	5720	3.81	4.50
	802.11n-HT20 MCS0	CH 100	5500	3.65	4.00
		CH 120	5600	3.81	4.00
		CH 144	5720	2.93	3.50
	802.11n-HT40 MCS0	CH 102	5510	2.84	3.50
		CH 126	5630	3.01	3.50
		CH 142	5710	2.55	3.00
	802.11ac-VHT20 MCS0	CH 100	5500	3.18	3.50
		CH 120	5600	3.70	4.00
		CH 144	5720	3.10	4.00

	802.11ac-VHT40 MCS0	CH 102	5510	3.44	4.00
		CH 126	5630	3.71	4.00
		CH 142	5710	2.84	3.00
	802.11ac-VHT80 MCS0	CH 106	5530	3.32	4.00
		CH 122	5610	2.75	3.00
		CH 138	5690	4.06	5.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit
5.5GHz WLAN ANT J3+ J4	802.11n-HT20 MCS0	CH 100	5500	6.71	7.00
		CH 116	5580	6.79	7.00
		CH 144	5720	5.15	6.00
	802.11n-HT40 MCS0	CH 102	5510	5.82	6.50
		CH 126	5630	6.16	6.50
		CH 142	5710	5.31	6.00
	802.11ac-VHT20 MCS0	CH 100	5500	5.91	6.50
		CH 116	5580	5.88	6.50
		CH 144	5720	5.55	6.00
	802.11ac-VHT40 MCS0	CH 102	5510	6.22	7.00
		CH 126	5630	6.70	7.00
		CH 142	5710	5.30	6.00
	802.11ac-VHT80 MCS0	CH 106	5530	7.01	7.50
		CH 122	5610	6.42	7.00
		CH 138	5690	7.54	8.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit
5.8GHz WLAN ANT J3	802.11a MCS0	CH 149	5745	5.34	6.00
		CH 157	5785	6.01	6.50
		CH 165	5825	6.75	7.00
	802.11n-HT20 MCS0	CH 149	5745	4.83	5.00
		CH 157	5785	5.44	6.00
		CH 165	5825	5.85	6.00
	802.11n-HT40 MCS0	CH 151	5755	5.13	6.00
		CH 159	5795	5.77	6.00
	802.11ac-VHT20 MCS0	CH 149	5745	6.37	7.00
		CH 157	5785	4.49	5.00
		CH 165	5825	4.78	5.00
	802.11ac-VHT40 MCS0	CH 151	5755	5.12	5.50
		CH 159	5795	4.38	5.00
	802.11ac-VHT80 MCS0	CH 155	5775	3.60	4.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit
5.8GHz WLAN ANT J4	802.11a MCS0	CH 149	5745	6.51	7.00
		CH 157	5785	7.15	8.00
		CH 165	5825	7.61	8.00
	802.11n-HT20 MCS0	CH 149	5745	5.75	6.00
		CH 157	5785	6.50	7.00
		CH 165	5825	7.09	7.50
	802.11n-HT40 MCS0	CH 151	5755	5.88	6.00
		CH 159	5795	6.37	7.00
	802.11ac-VHT20 MCS0	CH 149	5745	6.49	7.00
		CH 157	5785	6.41	7.00
		CH 165	5825	7.23	7.50
	802.11ac-VHT40 MCS0	CH 151	5755	5.81	6.00
		CH 159	5795	6.32	7.00
	802.11ac-VHT80 MCS0	CH 155	5775	6.21	7.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit
5.8GHz WLAN ANT J3+ J4	802.11a MCS0	CH 149	5745	11.85	12.00
		CH 157	5785	13.16	13.50
		CH 165	5825	14.36	15.00
	802.11n-HT20 MCS0	CH 149	5745	10.58	11.00
		CH 157	5785	11.94	12.50
		CH 165	5825	12.94	13.50
	802.11n-HT40 MCS0	CH 151	5755	11.01	12.00
		CH 159	5795	12.14	12.50
	802.11ac-VHT20 MCS0	CH 149	5745	12.86	13.00
		CH 157	5785	10.90	11.50
		CH 165	5825	12.01	12.50
	802.11ac-VHT40 MCS0	CH 151	5755	10.93	11.50
		CH 159	5795	10.70	11.00
	802.11ac-VHT80 MCS0	CH 155	5775	9.81	10.50

4. RF Exposure Evaluation

Standalone transmission MPE evaluation

Bands	Frequency (MHz)	Maximum Tune-up limit (dBm)	Time-averaging result (mW)	Power density (mW/cm²)	Limit for MPE (mW/cm²)
2.4GHz Ant J3	2412	12.0	31.62	0.006	1.0
2.4GHz Ant J4	2462	11.0	25.12	0.005	1.0
5.2GHz Ant J3	5180	8.0	12.59	0.003	1.0
5.2GHz Ant J4	5180	9.0	15.85	0.003	1.0
5.3GHz Ant J3	5290	6.0	7.94	0.002	1.0
5.3GHz Ant J4	5260	6.0	7.94	0.002	1.0
5.5GHz Ant J3	5530	5.5	7.08	0.001	1.0
5.5GHz Ant J4	5600	5.5	7.08	0.001	1.0
5.8GHz Ant J3	5825	7.0	10.0	0.002	1.0
5.8GHz Ant J4	5825	8.0	12.59	0.003	1.0
Bluetooth	2402	6.0	7.94	0.002	1.0

Note:

1. The antenna gain is 3dBi
2. According to KDB 447498 section 7.1, the source-based time-averaged maximum radiated power, according to the maximum antenna gain, must be applied to calculate the field strength and power density required to establish the minimum test separation distance.

Simultaneous transmission MPE evaluation

Bands	Fre. (MHz)	Maximum Tune-up limit (dBm)	Time-averaging result (mW)	Power density (mW/cm²)	Limit for MPE (mW/cm²)
2.4GHz Ant J3+Ant J4	2412	15.5	141.25	0.028	1.0
5.2GHz Ant J3+Ant J4	5210	13.0	79.43	0.016	1.0
5.3GHz Ant J3+Ant J4	5260	10.0	39.81	0.008	1.0
5.5GHz Ant J3+Ant J4	5690	8.5	28.18	0.006	1.0
5.8GHz Ant J3+Ant J4	5825	13.5	89.12	0.018	1.0
2.4GHz Ant J4+BT	2462	17.0	199.53	0.040	1.0
5GHz Ant J4+BT	5825	15.0	125.89	0.025	1.0

Note:

3. The antenna gain of J3+J4 is 6dBi
4. MPE calculation method

$$\text{Power Density} = P \cdot G / 4\pi R^2$$

Where:

P = Peak out power

G = Antenna gain

R = Separation distance (20cm)

Annex A General Information

1. Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Department:	Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Responsible Test Lab Manager:	Mr. Su Feng
Telephone:	+86 755 36698555
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2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

END OF REPORT