



VARIANT FCC TEST REPORT (PART 24)

Applicant:	FIH International Co., Ltd.			
Address:	No.18, Tongji zhonglu, Beijing Economic & Technological Development Area			
Manufacturer or Supplier:	HMD Global Oy			
Address:	Karaportti 2 02610 Espoo FINLAN	D		
Product:	GSM/WCDMA/LTE Mobile Phone			
Brand Name:	Nokia			
Model Name:	TA-1074			
FCC ID:	2AJOTTA-1074			
Date of tests:	May 23, 2018 ~ Oct. 19, 2018			
The tests have bee	en carried out according to the requi	rements of the following standard:		
	Subpart E ⊠ ANSI C63.26-2015 603-D ⊠ ANSI/TIA/EIA-603			
CONCLUSION: Th	e submitted sample was found to <u>C</u>	OMPLY with the test requirement		
Prepared by Roger Li Engineer / Mobile Department Approved by Sam Tung Manager / Mobile Department				
Roger				
	ate: Oct. 19, 2018	Date: Oct. 19, 2018		
This report is governed by, and inc http://www.bureauveritas.com/hom	This report is governed by, and incorporates by reference, CPS Conditions of Service as posted at the date of issuance of this report at http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/and is intended for your exclusive use. Any copying or replication of this report to or for any other person			

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF180522W002-11	Original release	Oct. 19, 2018

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 24 & Part 2						
STANDARD SECTION	TEST TYPE	RESULT	REMARK			
2.1046 24.232	Equivalent Isotropic Radiated Power	N/A	N/A			
2.1055 24.235	Frequency Stability	N/A	N/A			
2.1049 24.238(b)	Occupied Bandwidth	N/A	N/A			
24.232(d)	Peak to average ratio	N/A	N/A			
24.238(b)	Band Edge Measurements	N/A	N/A			
2.1051 24.238	Conducted Spurious Emissions	N/A	N/A			
2.1053 24.238	Radiated Spurious Emissions		Meet the requirement of limit. Minimum passing margin is -22.47dB at 49.65MHz.			

1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.66dB
	9KHz ~ 30MHz	2.68dB
Radiated emissions	30MHz ~ 1GHz	3.26dB
ixadiated emissions	1GHz ~ 18GHz	4.48dB
	18GHz ~ 40GHz	4.12dB

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



1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Mar. 16,18	Mar. 15,19
EXA Signal Analyzer	KEYSIGHT	N9010A-526	MY54510322	Mar. 16,18	Mar. 15,19
Bilog Antenna 1	ETS-LINDGREN	3143B	00161964	Nov. 26,16	Nov. 25,18
Bilog Antenna 2	ETS-LINDGREN	3143B	00161965	Nov. 26,16	Nov. 25,18
Horn Antenna 1	ETS-LINDGREN	3117	00168728	Nov. 26,16	Nov. 25,18
Horn Antenna 2	ETS-LINDGREN	3117	00168692	Nov. 26,16	Nov. 25,18
Loop antenna	Daze	ZN30900A	0708	Nov. 20,17	Nov. 19,18
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40 -K-SG/QMS-00 361		Dec. 16,16	Dec. 15,18
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Mar. 02,18	Mar. 01,19
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jul. 09,18	Jul. 08,19
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jul. 09,18	Jul. 08,19
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Jul. 09,18	Jul. 08,19
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn- CT0001143-1216	Apr. 21,18	Apr. 20,19
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	ADT	ADT_Radiated _V7.6.15.9.2	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SM A	1505	Jul. 09,18	Jul. 08,19
Power Meter	Anritsu	ML2495A	1506002	Mar. 02,18	Mar. 01,19
Power Sensor	Anritsu	MA2411B	1339352	Mar. 16,18	Mar. 15,19
Humid & Temp Programmable Tester	Juyi	ITH-120-45-CP -AR	IAA1504-001	Jul. 09,18	Jul. 08,19
MXG Analog Microvave Signal Generator	KEYSIGHT	N5183A	MY50143024	Mar. 13,18	Mar. 12,19

NOTE: 1. The calibration interval of the above test instruments is 12 months or 24 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

- 2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.
- 3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
- 4. The FCC Site Registration No. is 525120.



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	GSM/WCDMA/LTE Mobile Phone		
BRAND NAME	Nokia		
MODEL NAME	TA-1074		
POWER SUPPLY	5.0Vdc (adapter or host equipment) 3.9Vdc (Li-ion, battery)		
MODULATION TYPE	GSM, GPRS: GMSK EDGE: GMSK, 8PSK WCDMA: BPSK LTE Band 2: QPSK, 16QAM		
	GSM, GPRS, EDGE	1850.2MHz ~ 1909.8MHz	
	WCDMA	1852.4MHz ~ 1907.6MHz	
	LTE Band 2 Channel Bandwidth: 1.4MHz	1850.7MHz ~ 1909.3MHz	
	LTE Band 2 Channel Bandwidth: 3MHz	1851.5MHz ~ 1908.5MHz	
FREQUENCY RANGE	LTE Band 2 Channel Bandwidth: 5MHz	1852.5MHz ~ 1907.5MHz	
	LTE Band 2 Channel Bandwidth: 10MHz	1855.0MHz ~ 1905.0MHz	
	LTE Band 2 Channel Bandwidth: 15MHz	1857.5MHz ~ 1902.5MHz	
	LTE Band 2 Channel Bandwidth: 20MHz	1860.0MHz ~ 1900.0MHz	
ANTENNA TYPE	Fixed Internal Antenna with 3.17dBi gain		
HW VERSION	HW 0345		
SW VERSION	000C_0_34A		
I/O PORTS	Refer to user's manual		
CABLE SUPPLIED	USB cable: non-shielded, detac Earphone cable: non-shielded, o	·	

- 1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- The test data include in this report is copied from the original report RF180522W002-4. The differences compared with original report are changing model name & FCC ID and disable one SIM card.



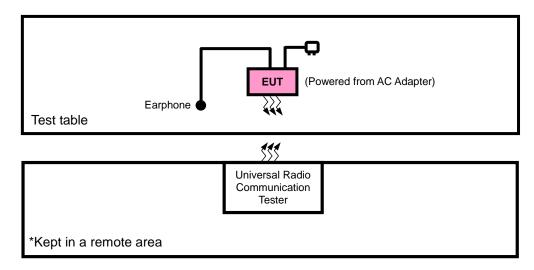
List of Accessories:

List of Accessories.					
ACCESSORIES	BRAND	MANUFACTURER	MODEL	SPECIFICATION	
Adapter 1 Salcomp (Shenzhen) Co., Ltd.		FC0202	I/P: 100-240Vac, 150mA O/P: 5Vdc, 1000mA		
Adapter 2	Aohai	DONGGUAN AOHAI TECHNOLOGY CO., LTD.	AD-5WU	I/P: 100-240Vac, 150mA O/P: 5Vdc, 1000mA	
Battery	SCUD	SCUD (Fujian) Electronics CO., Ltd.	HE336	Rating: 3.85Vdc, 2900mAh	
Earphone 1 Nokia		FIT	WH-108	1.5m non-shielded cable w/o core	
Earphone 2	Nokia	ОВО	WH-108	1.5m non-shielded cable w/o core	
USB Cable	Nokia	FIH	CA-190CD	1.0m non-shielded cable w/o core	

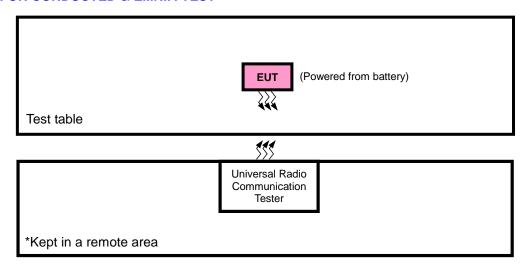


2.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION TEST



FOR CONDUCTED & E.I.R.P. TEST





2.3 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	DC source	LONG WEI	PS-6403D	010934269	N/A
2	PC	HP	A6608CN	3CR83825X3	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS			
1	C Line: Unshielded, Detachable 1.0m			
2	AC Line: Unshielded, Detachable 1.5m			

NOTE:

2.4 TEST ITEM AND TEST CONFIGURATION

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports

The worst case in EIRP and radiated emission was found when positioned on X-plane for GSM/EDGE/WCDMA/ LTE. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
Α	EUT + Adapter + USB Cable + Earphone with GSM ,WCDMA or LTE link

GSM MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
А	RADIATED EMISSION	512 to 810	512, 661, 810	GSM, EDGE

^{1.} All power cords of the above support units are non shielded (1.8m).



WCDMA MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
А	RADIATED EMISSION	9262 to 9538	9262, 9400, 9538	WCDMA

LTE BAND 2

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
		18607 to 19193	18900	1.4MHz	QPSK	1 RB / 0 RB Offset
		18615 to 19185	18900	3MHz	QPSK	1 RB / 0 RB Offset
		18625 to 19175	18900	5MHz	QPSK	1 RB / 0 RB Offset
A RADIATED EMISSION	18650 to 19150	18650, 18900, 19150	10MHz	QPSK	1 RB / 0 RB Offset	
		18675 to 19125	18900	15MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18900	20MHz	QPSK	1 RB / 0 RB Offset

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RADIATED EMISSION	23deg. C, 70%RH	5Vdc from adapter	Vincent



2.5 EUT OPERATING CONDITIONS

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

2.6 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2
FCC 47 CFR Part 24
KDB 971168 D01 Power Meas License Digital Systems v03
ANSI/TIA/EIA-603-D
ANSI/TIA/EIA-603-E
ANSI C63.26-2015

NOTE: All test items have been performed and recorded as per the above standards.

3 TEST TYPES AND RESULTS

3.1 RADIATED EMISSION MEASUREMENT

3.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to -13dBm.

3.1.2 TEST PROCEDURES

- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G
- c. EIRP = Output power level of S.G TX cable loss + Antenna gain of substitution horn.

NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

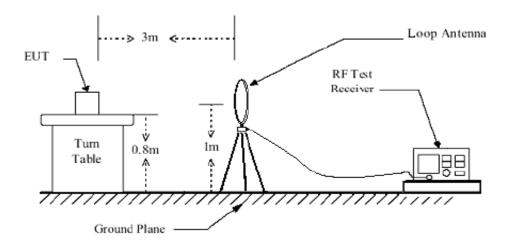
3.1.3 DEVIATION FROM TEST STANDARD

No deviation

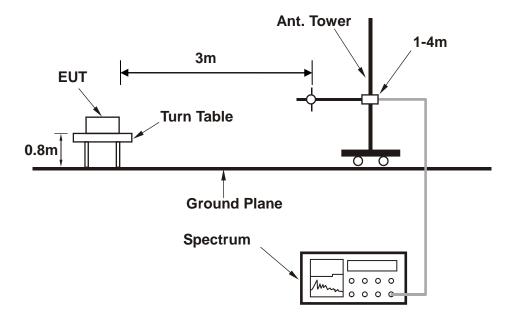


3.1.4 TEST SETUP

<Below 30MHz>

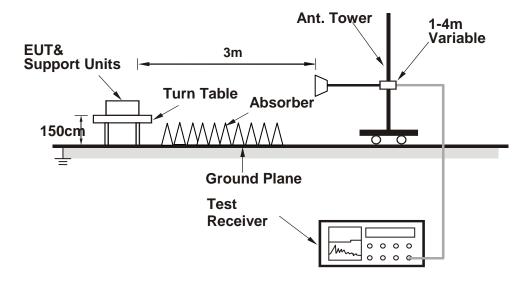


< Frequency Range 30MHz~1GHz >





< Frequency Range above 1GHz >



For the actual test configuration, please refer to the attached file (Test Setup Photo).



3.1.5 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

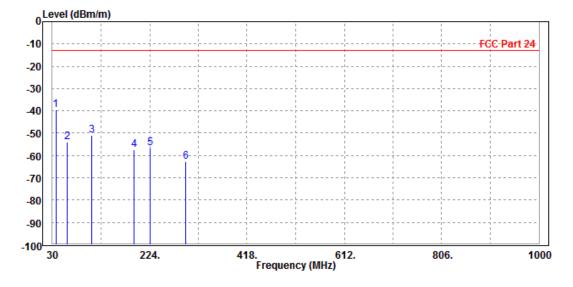
9 KHz – 30 MHz data: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

30 MHz - 1GHz data:

PCS 1900:

MODE	TX channel 661	FREQUENCY RANGE	Below 1000MHz		
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter		
TESTED BY	Vincent				
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M					

				Limit	0ver			
	Freq	Level	Level	Line	Limit	Factor	Remark	Pol/Phase
_								
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	36.820	-39.67	-51.99	-13.00	-26.67	12.32	Peak	Horizontal
2	59.430	-54.14	-47.56	-13.00	-41.14	-6.58	Peak	Horizontal
3	108.630	-50.78	-37.82	-13.00	-37.78	-12.96	Peak	Horizontal
4	192.380	-57.55	-40.11	-13.00	-44.55	-17.44	Peak	Horizontal
5	224.960	-56.65	-39.89	-13.00	-43.65	-16.76	Peak	Horizontal
6	296.120	-62.70	-48.70	-13.00	-49.70	-14.00	Peak	Horizontal

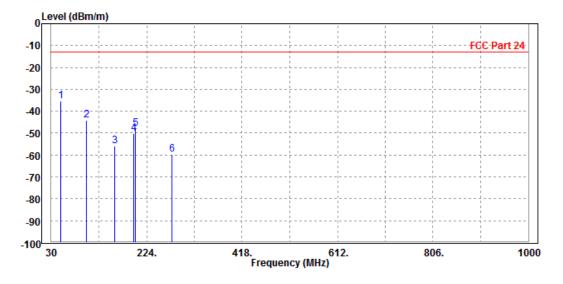


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MODE	TX channel 661	FREQUENCY RANGE	Below 1000MHz	
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter	
TESTED BY Vincent				
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M				

	Freq	Level	Read Level			Factor	Remark	Pol/Phase
_	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	49.650	-35.47	-30.86	-13.00	-22.47	-4.61	Peak	Vertical
2	101.760	-44.15	-33.24	-13.00	-31.15	-10.91	Peak	Vertical
3	158.760	-56.02	-40.66	-13.00	-43.02	-15.36	Peak	Vertical
4	198.430	-50.35	-39.52	-13.00	-37.35	-10.83	Peak	Vertical
5	201.850	-47.75	-37.08	-13.00	-34.75	-10.67	Peak	Vertical
6	276.000	-59.81	-48.41	-13.00	-46.81	-11.40	Peak	Vertical



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ABOVE 1GHz DATA

Note: For higher frequency, the emission is too low to be detected.

PCS 1900:

CH 512

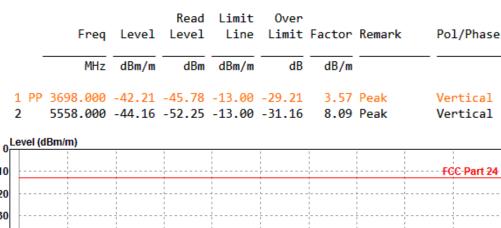
MODE	TX channel 512	FREQUENCY RANGE	Above 1000MHz		
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter		
TESTED BY	TESTED BY Vincent				
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M					



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MODE	TX channel 512	FREQUENCY RANGE	Above 1000MHz	
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter	
TESTED BY Vincent				
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M				

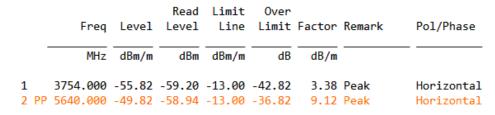


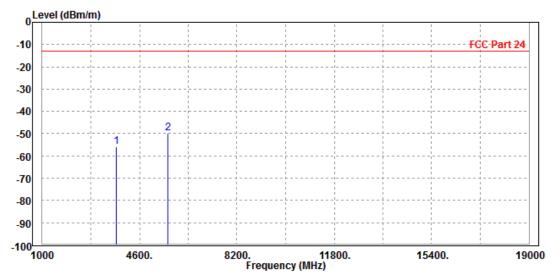


EDGE 1900:

CH 661

MODE	TX channel 661	FREQUENCY RANGE	Above 1000MHz	
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter	
TESTED BY Vincent				
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M				

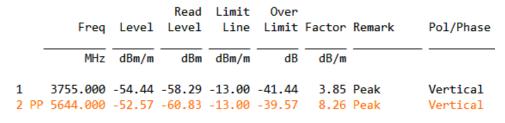


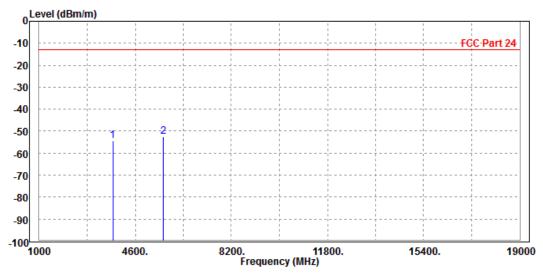


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MODE	TX channel 661	FREQUENCY RANGE	Above 1000MHz	
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter	
TESTED BY Vincent				
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M				



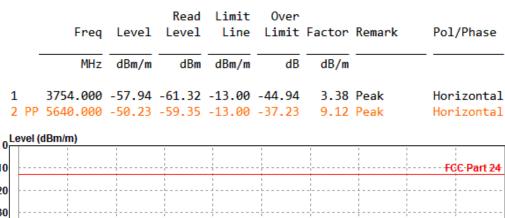


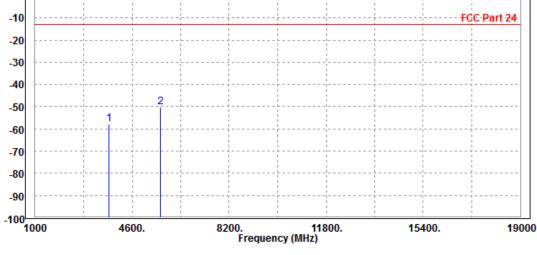


WCDMA Band II

CH 9400

MODE	TX channel 9400	FREQUENCY RANGE	Above 1000MHz	
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter	
TESTED BY Vincent				
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M				





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-80 -90

-100 1000

4600.

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MODE	TX channel 9400	FREQUENCY RANGE	Above 1000MHz	
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter	
TESTED BY	Vincent			
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M				



8200. 11800. Frequency (MHz) 15400.

19000

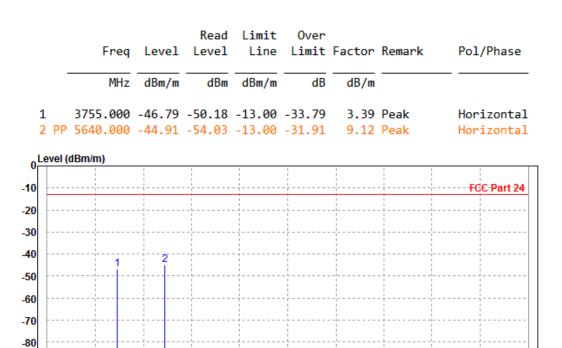


LTE Band 2

CHANNEL BANDWIDTH: 10MHz / QPSK

CH 18900

MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz	
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter	
TESTED BY	Vincent			
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M				



8600. 12400. Frequency (MHz)

16200.

20000

-90

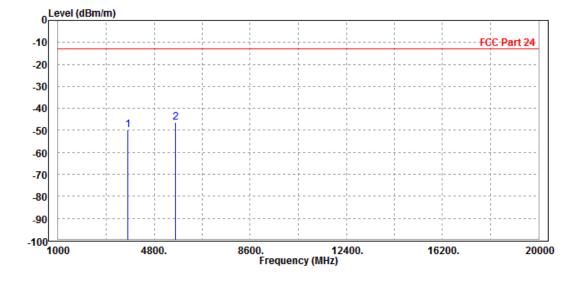
-100 1000

4800.



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz	
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter	
TESTED BY	Vincent			
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M				

	Freq	Level		Limit Line		Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 2 PF	3755.000 5640.000							Vertical Vertical





4 INFORMATION ON THE TESTING LABORATORIES

We, BV 7LAYERS COMMUNICATIONS TECHNOLOGY (SHENZHEN) CO. LTD., were founded in 2015 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Shenzhen EMC/RF Lab:

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Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also.

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5 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---