

VARIANT TEST REPORT

Applicant:	HMD Global Oy
Address:	Bertel Jungin aukio 9, 02600 Espoo, Finland

Manufacturer or Supplier:	HMD Global Oy
Address:	Bertel Jungin aukio 9, 02600 Espoo, Finland
Product:	Tablet PC
Brand Name:	NOKIA
Model Name:	TA-1487
FCC ID:	2AJOTTA-1487
Date of tests:	Aug. 03, 2022 ~ Sep. 26, 2022

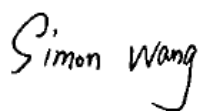
The submitted sample of the above equipment has been tested for according to the requirements of the following standards:

- FCC Part 15, Subpart C, Section 15.247 ANSI C63.10-2013
 FCC Part 15, Subpart E, Section 15.407

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Simon Wang
Engineer / Mobile Department

Approved by Luke Lu
Manager / Mobile Department



Date: Sep. 26, 2022



Date: Sep. 26, 2022

This report is governed by, and incorporates by reference, the Conditions of Testing 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 or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P22070038RF09	Original release	Sep. 20, 2022
W7L-P22070039RF05	Based on the original product remove WWAN components, change model name.	Sep. 26, 2022



1 GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Tablet PC	
BRAND NAME	NOKIA	
MODEL NAME	TA-1478	
NOMINAL VOLTAGE	5.0Vdc(adapter or host equipment) 3.85Vdc (Li-ion, battery)	
MODULATION TYPE	BT_LE	GFSK
	Bluetooth	GFSK, $\pi/4$ -DQPSK, 8DPSK
	FM	FM
	WLAN	DSSS, OFDM
	GPS/GALILEO/GLO NASS	BPSK
OPERATING FREQUENCY OPERATING FREQUENCY	Bluetooth/BT_LE	2402MHz ~ 2480MHz
	FM	87.5MHz ~ 108MHz
	WLAN	2412 ~ 2462MHz for 11b/g/n(HT20/40) 5180 ~ 5240MHz, 5260 ~ 5320 MHz, 5500 ~ 5720MHz, 5745 ~ 5825 MHz for 11a/ n(HT20)/ n(HT40) / ac(VHT20)/ ac(VHT40) / ac(VHT80)
	GPS/GALILEO/GLO NASS	1559MHz ~ 1610MHz
HW VERSION	EM_U1630_V1.2 L20	
SW VERSION	V0.492_B01	
I/O PORTS	Refer to user's manual	
CABLE SUPPLIED	USB cable: non-shielded cable, with w/o ferrite core, 1 meter Earphone: non-shielded cable, with w/o ferrite core, 1.5 meter	
ACCESSORY DEVICES	Refer to note as below	

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.



List of Accessory:

ACCESSORIES	BRAND	MANUFACTURER	MODEL	SPECIFICATION
Battery	NOKIA	Guangdong Fenghua New Energy Co., Ltd.	WTT80	Capacity: 3.8 Vdc, 8000mAh
AC Adapter	NOKIA	Shenzhen Baijunda Electronic Co., Ltd	AD-010U	I/P: 100-240Vac, 0.35A, O/P: 5.0Vdc, 2.0A
Earphone	NOKIA	JUWEI ELECTRONICS CO., LTD	JWEP1242-W09H	Signal Line, 1.5meter
USB Cable	NOKIA	Saibao (Jiangxi) Industrial Co., Ltd	AC-2A	Signal Line, 1.0meter

2 SUMMARY OF TEST RESULTS

2.1 TEST RESULTS

TEST TYPE	Result
Radiated Emissions	Pass

2.2 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	UNCERTAINTY
Radiated emissions & Radiated Power (30MHz~1GMHz)	±4.98dB
Radiated emissions & Radiated Power (1GMHz ~6GMHz)	±4.70dB
Radiated emissions (6GMHz ~18GMHz)	±4.60dB
Radiated emissions (18GMHz ~40GMHz)	±4.12dB

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

2.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	May. 19,20	May. 18,23
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Mar. 06,22	Mar. 05,23
Horn Antenna	ETS-LINDGREN	3117	00168692	Mar. 06,22	Mar. 05,23
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 28, 21	Aug. 27, 22
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 27, 22	Aug. 26, 23
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jun. 02,22	Jun. 01,23
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 21,22	Feb. 20,23
Signal Pre-Amplifier	EMSI	EMC 9135	980249	May.12,22	May.11,23
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	May.12,22	May.11,23
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Feb. 21,22	Feb.20,23
DC Source	Kikusui/JP	PMX18-5A	0000001	Aug. 25,21	Aug. 24,22
DC Source	Kikusui/JP	PMX18-5A	0000001	Aug. 24,22	Aug. 23,23
Power Meter	Anritsu	ML2495A	1506002	Feb. 22,22	Feb. 21,23
Power Sensor	Anritsu	MA2411B	1339352	May. 14,22	May. 13,23
Loop Antenna	Schwarzbeck	FMZB 1519B	00173	Sep.05,21	Sep. 04,22
Loop Antenna	Schwarzbeck	FMZB 1519B	00173	Sep. 04,22	Sep. 03,23
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.15,22	May.14,23
Test Software	E3	V 9.160323	N/A	N/A	N/A
Temperature Chamber	ESPEC	SH-242	93000855	May. 12,22	May. 11,23
MXG Analog Microwave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 18,22	Feb. 17,23

- NOTE:**
- 1.The calibration interval of the above test instruments is 12 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
 2. The test was performed in 3m Chamber.
 3. The test was performed in 3m Semi-anechoic Chamber.
 4. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
 5. The FCC Site Registration No. is 525120; The Designation No. is CN1171.



2.4 Referenced Standards

The following referenced standards are necessary for the report. For undated references in this report, the cited version applies.

No.	Identify	Note
1	FCC Part 15, Subpart C, Section 15.247	For BT/BLE/2.4G WIFI
2	FCC Part 15, Subpart E, Section 15.407	For 5G WIFI

Note: More informations and test procedures pls refer to 15.247/15.407 reports.

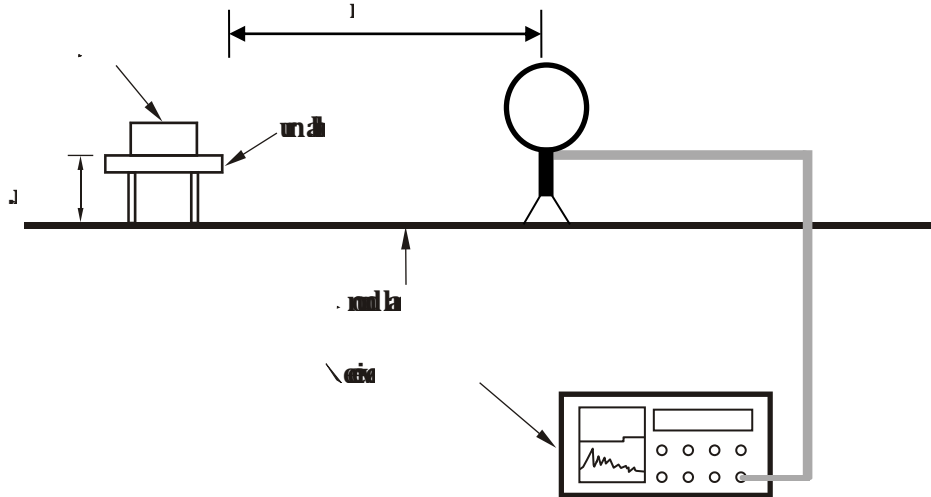
2.5 Test Configurations

Test Configurations	Description
Worst case test Mode	
1	BT2.0(π /4 DQPSK -CH 78)+5G WIFI(AC80-CH 42)

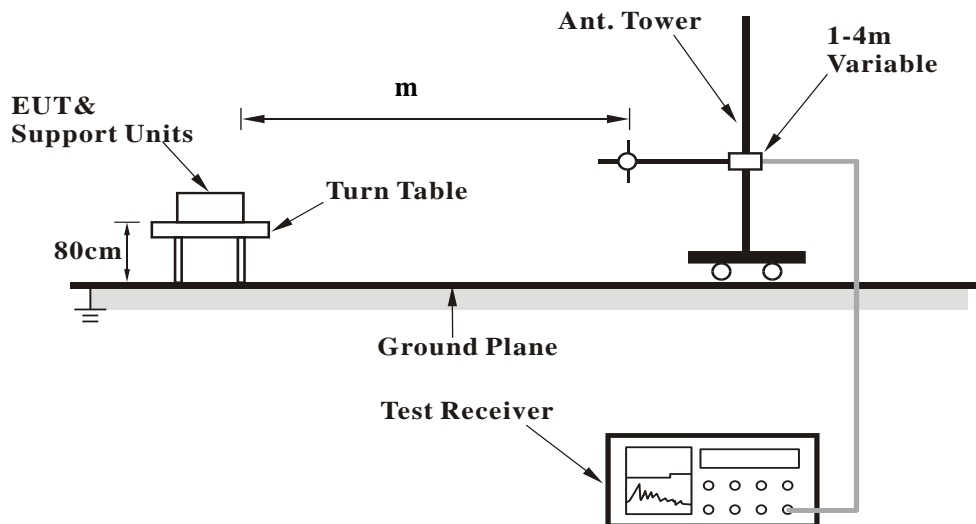
- Note:**
1. Test equipment and site refer to Referenced Standards report
 2. For higher frequency, the emission is 20dB below the limit was not record

2.6 Test Data

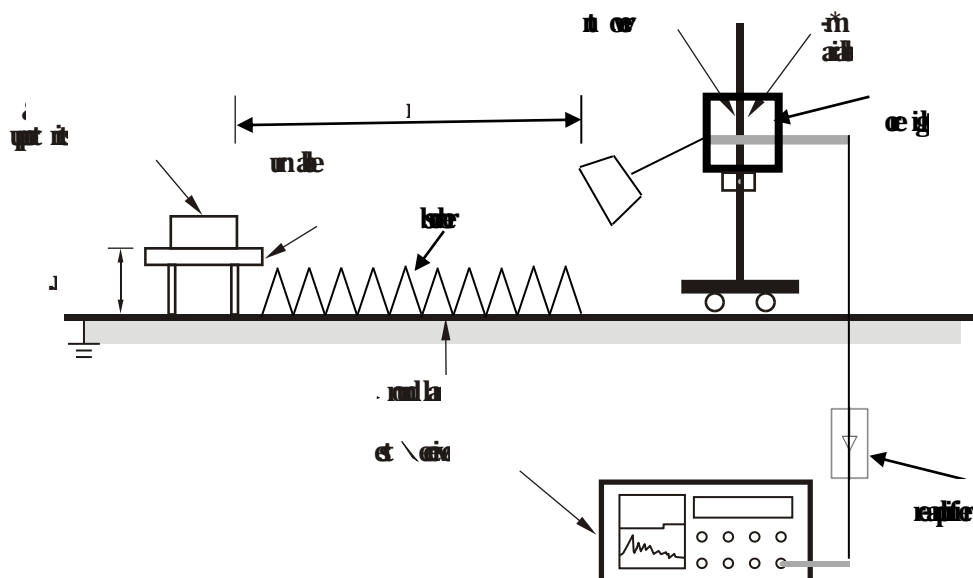
<Frequency Range 9KHz~30MHz >



< Frequency Range 30MHz~1GHz >



<Frequency Range above 1GHz>



Note: Above 1G is a directional antenna

Depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

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

2.6.1 EUT OPERATING CONDITIONS

- Set the EUT under full load condition and placed them on a testing table.
- Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.
- The necessary accessories enable the EUT in full functions.

2.6.2 TEST RESULTS

NOTE : The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

BT2.0($\pi/4$ DQPSK-CH 78)+5G WIFI(AC80-CH 42):

BELOW 1GHz WORST-CASE DATA:

30 MHz – 1GHz data:

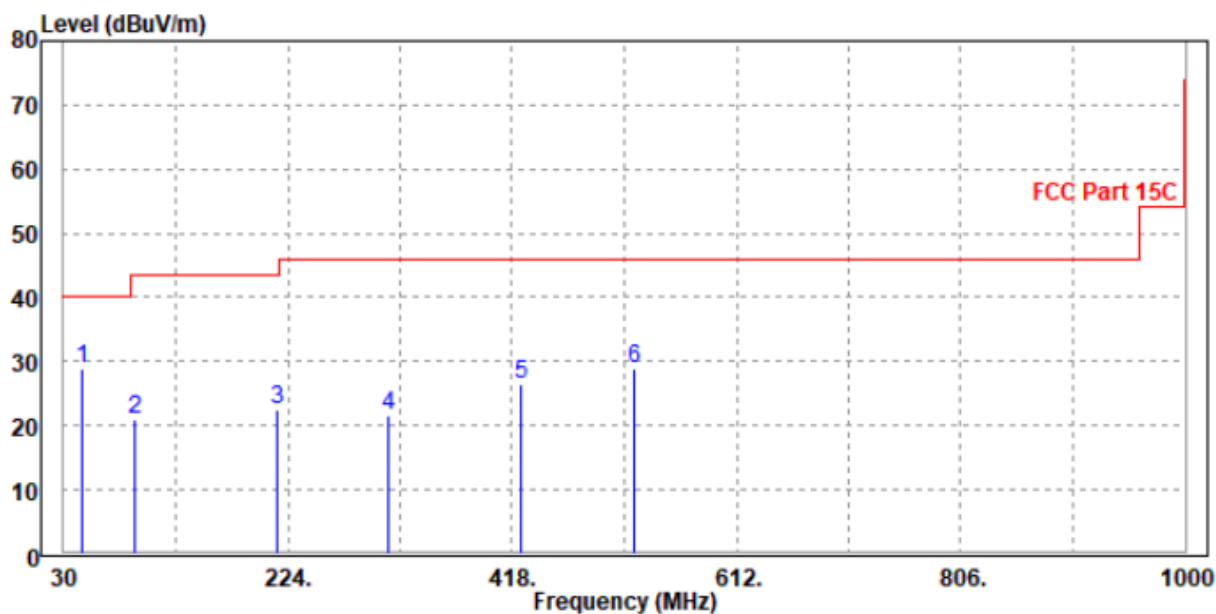
BT2.0($\pi/4$ DQPSK-CH 78)

CHANNEL	TX Channel 78	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
45.28	29.03	55.28	40	-10.97	10.48	0.37	37.1	137	360	QP
92.348	21.11	48.21	43.5	-22.39	9.28	0.52	36.9	189	231	QP
215.28	22.4	45.96	43.5	-21.1	11.97	0.76	36.29	146	341	QP
310.644	21.46	42.58	46	-24.54	14.23	0.93	36.28	148	188	QP
425.318	26.54	45.22	46	-19.46	16.68	1.11	36.47	108	51	QP
523.648	28.88	45.81	46	-17.12	18.48	1.26	36.67	182	90	QP

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.



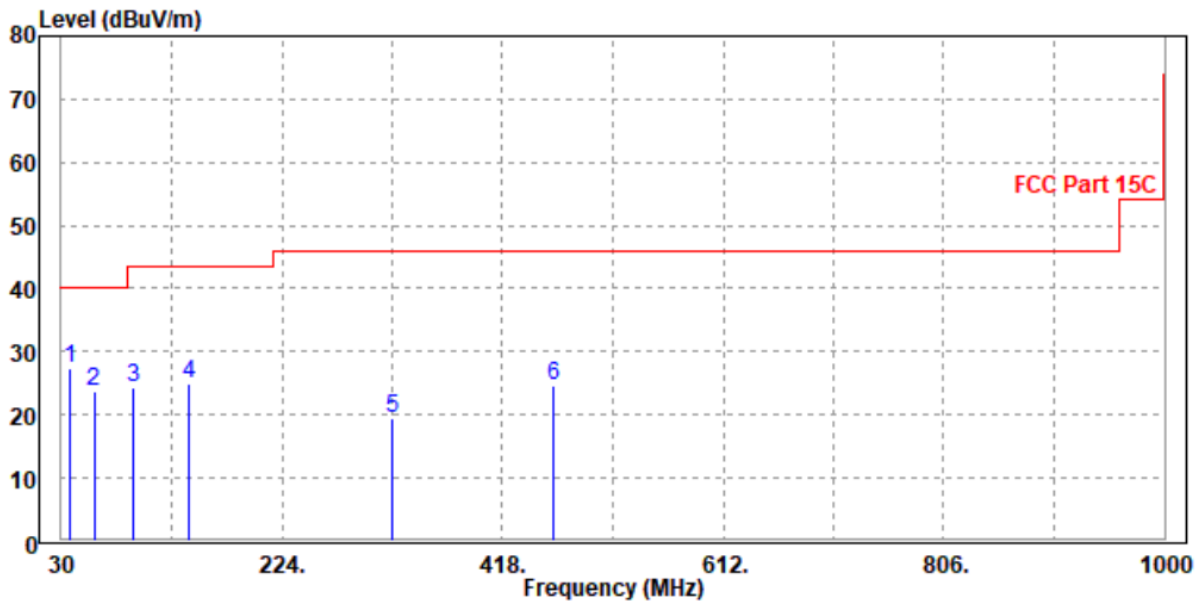


CHANNEL	TX Channel 78	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
38.318	27.39	50.22	40	-12.61	14.08	0.35	37.26	191	12	QP
58.693	23.8	51.57	40	-16.2	8.74	0.44	36.95	164	17	QP
93.18	24.27	51.88	43.5	-19.23	8.76	0.52	36.89	185	163	QP
142.527	24.91	51.57	43.5	-18.59	9.3	0.64	36.6	143	111	QP
320.27	19.34	40.22	46	-26.66	14.47	0.94	36.29	135	231	QP
463.18	24.67	42.93	46	-21.33	17.12	1.17	36.55	137	289	QP

REMARKS:

- 1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.



ABOVE 1GHz WORST-CASE DATA:

Note: 1. For radiated emissions testing, the full testing range of different modes have been scanned, only the worst case harmonic data is reported in the sheet.

2. All other emissions that more than 20dB below the limit were not recorded

BT2.0(π/4 DQPSK-CH 78)+5G WIFI(AC80-CH 42):

CHANNEL	TX Channel 78(BT π/4 DQPSK)/ TX Channel 42(5G WIFI AC80)	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.77	59.81	74	-22.23	31.75	6.18	45.97	100		Peak
2390	45.17	53.21	54	-8.83	31.75	6.18	45.97	100		Average
2480	103.76	111.35	/	/	32.04	6.3	45.93	100		Peak
2480	103.23	110.82	/	/	32.04	6.3	45.93	100		Average
2483.5	58.88	66.45	74	-15.12	32.05	6.31	45.93	100		Peak
2483.5	47.05	54.62	54	-6.95	32.05	6.31	45.93	100		Average
5150	58.25	59.32	74	-15.75	34.52	9.92	45.51			Peak
5150	50.82	51.89	54	-3.18	34.52	9.92	45.51			Average
5210	92.12	93.16	/	/	34.57	9.9	45.51			Peak
5210	84.84	85.88	/	/	34.57	9.9	45.51			Average
5350	54.81	55.79	74	-19.19	34.68	9.85	45.51			Peak
5350	47.37	48.35	54	-6.63	34.68	9.85	45.51			Average

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.66	59.31	74	-22.34	32.14	6.18	45.97	100	94	Peak
2390	45.33	52.98	54	-8.67	32.14	6.18	45.97	100	94	Average
2480	97.57	104.85	/	/	32.35	6.3	45.93	100	21	Peak
2480	96.91	104.19	/	/	32.35	6.3	45.93	100	21	Average
2483.5	52.35	59.61	74	-21.65	32.36	6.31	45.93	100	143	Peak
2483.5	45.89	53.15	54	-8.11	32.36	6.31	45.93	100	143	Average
5150	55.23	56.22	74	-18.77	34.6	9.92	45.51	158	198	Peak
5150	49.64	50.63	54	-4.36	34.6	9.92	45.51	158	198	Average
5210	85.64	86.65	/	/	34.6	9.9	45.51	158	350	Peak
5210	79.15	80.16	/	/	34.6	9.9	45.51	158	350	Average
5350	54.13	55.19	74	-19.87	34.6	9.85	45.51	158	96	Peak
5350	47.57	48.63	54	-6.43	34.6	9.85	45.51	158	96	Average

REMARKS:

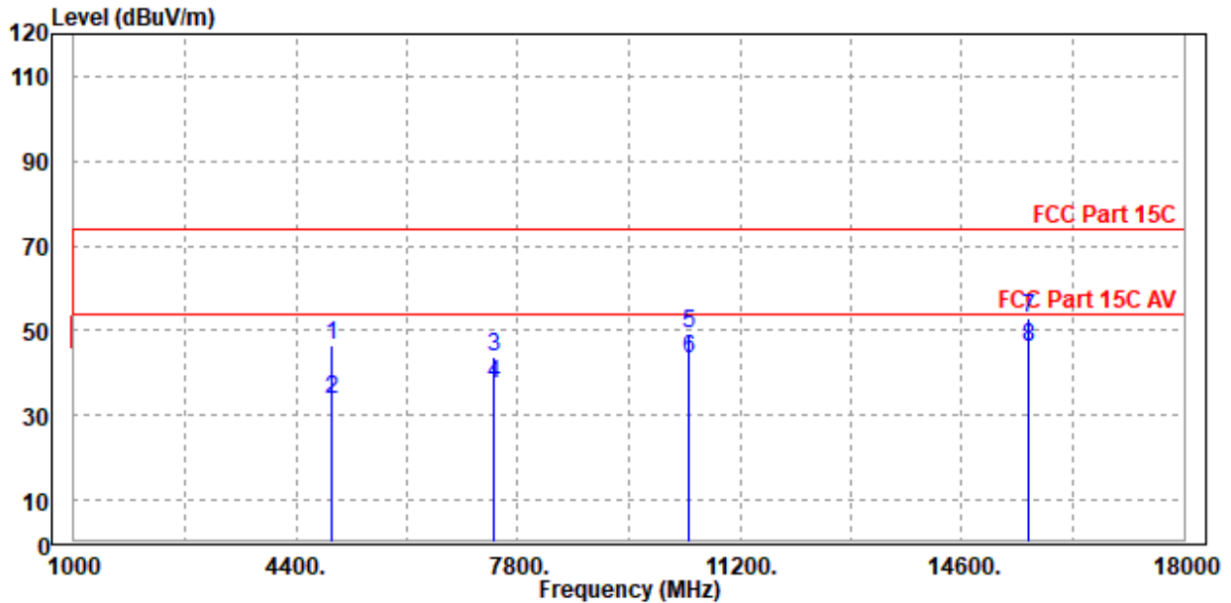
- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 2480MHz/ 5210MHz: Fundamental frequency.



BT2.0($\pi/4$ DQPSK-CH 78)+5G WIFI(AC80-CH 42)-Harmonic:

NOTE : The 18G~25GHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

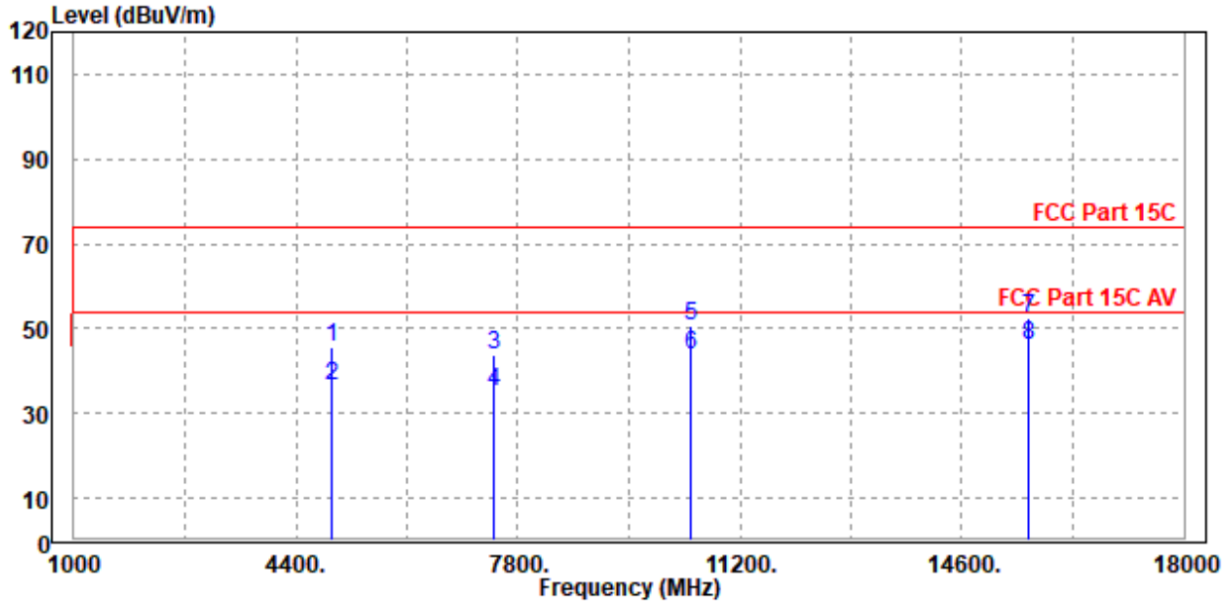
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M



	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m		
1	4961.000	46.45	47.64	74.00	-27.55	-1.19	Peak	Horizontal
2	4961.000	33.72	34.91	54.00	-20.28	-1.19	Average	Horizontal
3	7440.000	43.96	41.98	74.00	-30.04	1.98	Peak	Horizontal
4	7440.000	37.41	35.43	54.00	-16.59	1.98	Average	Horizontal
5	10418.000	49.09	42.19	74.00	-24.91	6.90	Peak	Horizontal
6	10418.000	43.36	36.46	54.00	-10.64	6.90	Average	Horizontal
7	PK15630.000	53.08	39.98	74.00	-20.92	13.10	Peak	Horizontal
8	PP15630.000	46.26	33.16	54.00	-7.74	13.10	Average	Horizontal



ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M



	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m		
1	4961.000	45.58	46.57	74.00	-28.42	-0.99	Peak	Vertical
2	4961.000	36.45	37.44	54.00	-17.55	-0.99	Average	Vertical
3	7440.000	43.77	41.76	74.00	-30.23	2.01	Peak	Vertical
4	7440.000	35.06	33.05	54.00	-18.94	2.01	Average	Vertical
5	10435.000	50.59	42.42	74.00	-23.41	8.17	Peak	Vertical
6	10435.000	44.03	35.86	54.00	-9.97	8.17	Average	Vertical
7	PK15630.000	52.26	40.25	74.00	-21.74	12.01	Peak	Vertical
8	PP15630.000	46.19	34.18	54.00	-7.81	12.01	Average	Vertical