Certificate #6613.01

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:	Mobile Phone
Brand Name:	HMD
Model Name:	TA-1681
FCC ID:	2AJOTTA-1681
Date of tests:	Aug. 29, 2024 ~ Sep. 27, 2024

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 C63.10-2020**
☒ **FCC Part 27** ☒ **FCC PART 22, Subpart H** ☒ **FCC PART 24, Subpart E** ☒ **ANSI/TIA/EIA-603-D**
☒ **FCC Part 2** ☒ **ANSI/TIA/EIA-603-E** ☒ **ANSI C63.26-2015**

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

Prepared by Hanwen Xu Engineer / Mobile Department	Approved by Peibo Sun Manager / Mobile Department
Date: Sep. 27, 2024	Date: Sep. 27, 2024

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
PSU-NQN2405210111RF07	Original release	Sep. 27, 2024

1 GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF EUT

PRODUCT*	Mobile Phone	
BRAND NAME*	HMD	
MODEL NAME*	TA-1681	
NOMINAL VOLTAGE*	5Vdc (Adapter) 3.8Vdc (Battery)	
MODULATION TYPE*	**Bluetooth**	GFSK, π/4-DQPSK, 8DPSK
	GSM/GPRS	GMSK
	WCDMA	HSDPA,HSUPA
	LTE	QPSK,16QAM
OPERATING FREQUENCY	**Bluetooth**	2402MHz ~ 2480MHz
	GSM/GPRS	824.2MHz ~ 848.8MHz (FOR GSM 850) 1850.2MHz ~ 1909.8MHz (FOR GSM 1900)
	WCDMA	1852.4MHz ~ 1907.6MHz(FOR WCDMA Band 2) 1712.4MHz ~ 1752.6MHz(FOR WCDMA Band 4) 826.4MHz ~ 846.6MHz (FOR WCDMA Band 5)
	LTE	1850.7MHz ~ 1909.3MHz (FOR LTE Band2) 1710.7MHz ~ 1754.3MHz (FOR LTE Band4) 824.7MHz ~ 848.3MHz (FOR LTE Band5) 2502.5MHz ~ 2567.5MHz (FOR LTE Band7) 2572.5MHz ~ 2617.5MHz (FOR LTE Band38) 2537.5MHz ~2652.5MHz (FOR LTE Band41)
HW VERSION*	FF618-MB-V3.0	
SW VERSION*	MOCOR_20A_MP_W22.04.6_P5	
I/O PORTS*	Refer to user's manual	
CABLE SUPPLIED*	USB cable: non-shielded cable, with w/o ferrite core, 1.0 meter	
ACCESSORY DEVICES*	Refer to note as below	

NOTE:

1. *****Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, Test Lab is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.

2. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

4. Antenna gain and EUT conducted cable loss are provided by the customer, and the laboratory will record the results based on these items that involve these two parameters.

5. List of Accessory:

ACCESSORIES	BRAND	MANUFACTURER	MODEL	SPECIFICATION
USB Cable	HMD	Huizhou Juwei Electronics Co., Ltd.	JWUB1801-W27H	USB 2.0
Battery	HMD	HuNan ADF Alternative Energy Technology Co., Ltd	BL-L4E	3.8V, Rated Capacity: 1450mAh, 5.51Wh Typical Capacity: 1500mAh, 5.7Wh

2 SUMMARY OF TEST RESULTS

2.1 TEST RESULTS

TEST TYPE	Result
Radiated Emissions	Pass

***Test Lab Information Reference**

Lab A:

Huarui 7Layers High Technology (Suzhou) Co., Ltd.

Lab Address:

Tower N, Innovation Center, 88 Zuyi Road, High-tech District, Suzhou City, Anhui Province

Accredited Test Lab Cert 6613.01

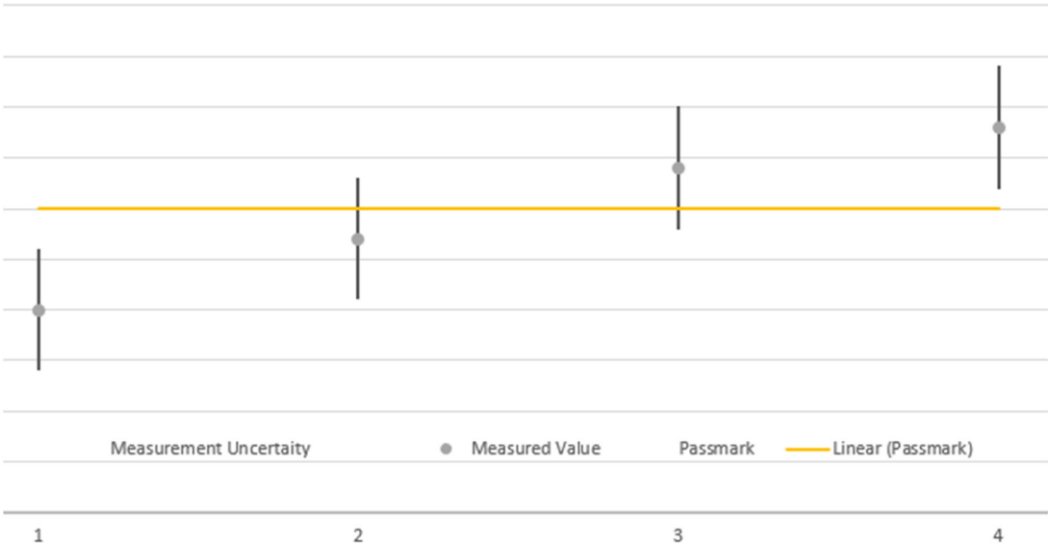
The FCC Site Registration No. is 434559; The Designation No. is CN1325.

2.2 MEASREMENT 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~1GHz)	±4.98dB
Radiated emissions & Radiated Power (1GHz ~6GHz)	±4.70dB
Radiated emissions (6GHz ~18GHz)	±4.60dB
Radiated emissions (18GHz ~40GHz)	±4.12dB

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



The verdicts in this test report are given according the above diagram:

Case	Measured Value	Uncertainty Range	Verdict
1	below pass mark	below pass mark	Passed
2	below pass mark	within pass mark	Passed
3	above pass mark	within pass mark	Failed
4	above pass mark	above pass mark	Failed

That means, the laboratory applies, as decision rule (see ISO/IEC 17025:2017), the so-called shared risk principle.

2.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Pre-Amplifier	R&S	SCU18F1	100815	Aug.29,24	Aug.28,26
Pre-Amplifier	R&S	SCU08F1	101028	Sep.16,22	Sep.15,24
Pre-Amplifier	R&S	SCU08F1	101028	Sep.15,24	Sep.14,26
Signal Generator	R&S	SMB100A	182185	Mar.29,24	Mar.28,26
3m Fully-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-01Chamber	Nov.25,22	Nov.24,25
3m Semi-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-02Chamber	Nov.25,22	Nov.24,25
6DB attenuator	Tonscend Technology Co., Ltd	N/A	23062787	N/A	N/A
EMI TEST Receiver	R&S	ESW44	101973	Mar.28,24	Mar.27,26
Bilog Antenna	SCHWARZBECK	VULB 9163	1264	Dec.26,23	Dec.25,25
Horn Antenna	ETS-LINDGREN	3117	227836	Aug.21,24	Aug.20,26
Horn Antenna (18GHz-40GHz)	Steatite Q-par Antennas	QMS 00880	23486	Jul.15,24	Jul.14,26
Horn Antenna	Steatite Q-par Antennas	QMS 00208	23485	Aug.21,24	Aug.20,26
Loop Antenna	SCHWARZ	HFH2-Z2/Z2E	100976	Feb.22,24	Feb.21,26
WIDEBANDRADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.19,24	Jun.18,26
Test Software	ELEKTRA	ELEKTRA4.32	N/A	N/A	N/A
Open Switch and Control Unit	R&S	OSP220	101964	N/A	N/A
DC Source	HYELEC	HY3010B	551016	Aug.31,22	Aug.30,24
DC Source	HYELEC	HY3010B	551016	Aug.30,24	Aug.29,26
Hygrothermograph	DELI	20210528	SZ014	Sep.06,22	Sep.05,24
Hygrothermograph	DELI	20210528	SZ014	Sep.05,24	Sep.04,26
PC	LENOVO	E14	HRSW0024	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-7.00M	N/A	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-4.00M	N/A	N/A	N/A
CABLE	R&S	W13.02	N/A	Apr.27,24	Apr.26,25
CABLE	R&S	W12.14	N/A	Apr.27,24	Apr.26,25

NOTE: 1.The calibration interval of the above test instruments is 12 /24/ 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 and RF Oven Room.

4. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.

5. The FCC Site Registration No. is 434559; The Designation No. is CN1325.

2.4 REFERENCED STANDARDS

The fellowing 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
2	FCC PART 22, Subpart H	For WWAN
3	FCC PART 24, Subpart E	For WWAN
4	FCC Part 27	For WWAN

Note: More informations and test procedures pls refer to 15.247/Part22/Part24/ Part27 reports.

2.5 TEST CONFIGURATIONS

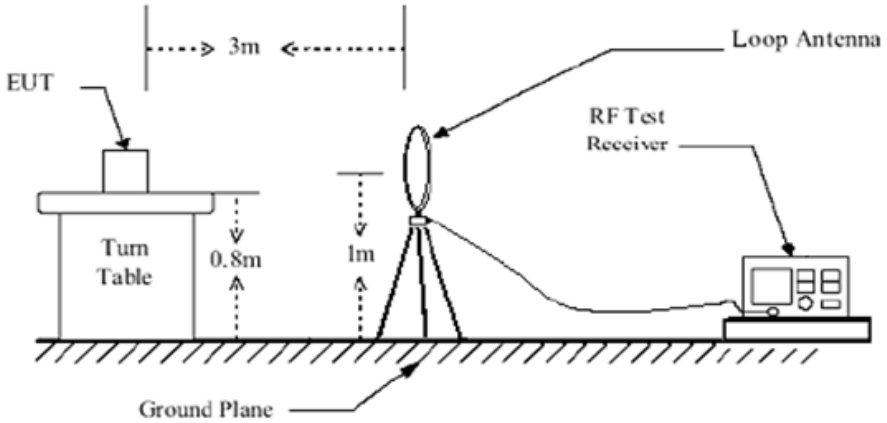
Test Configurations	Description
Worst case test Mode	
1	WLAN-BT-1DH5-CH78+WCDMA-B5-MID
2	WLAN-BT-1DH5-CH78+LTE-B2-MID-10M
3	WLAN-BT-1DH5-CH78+LTE-B41-MID-15M

Note: 1. Test equipment and site refer to Referenced Standards report

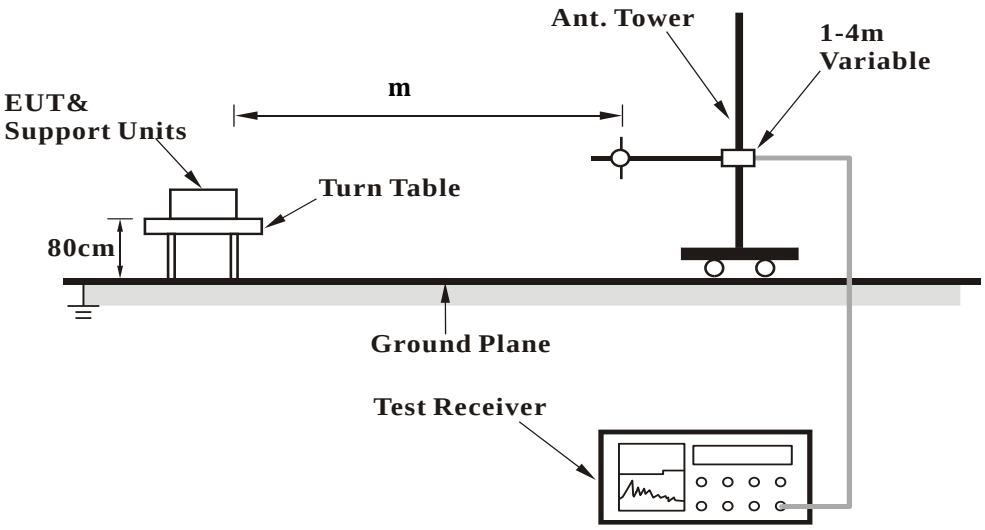
2. For higher frequency, the emission is 20dB below the limit was not record

2.6 TEST DATA

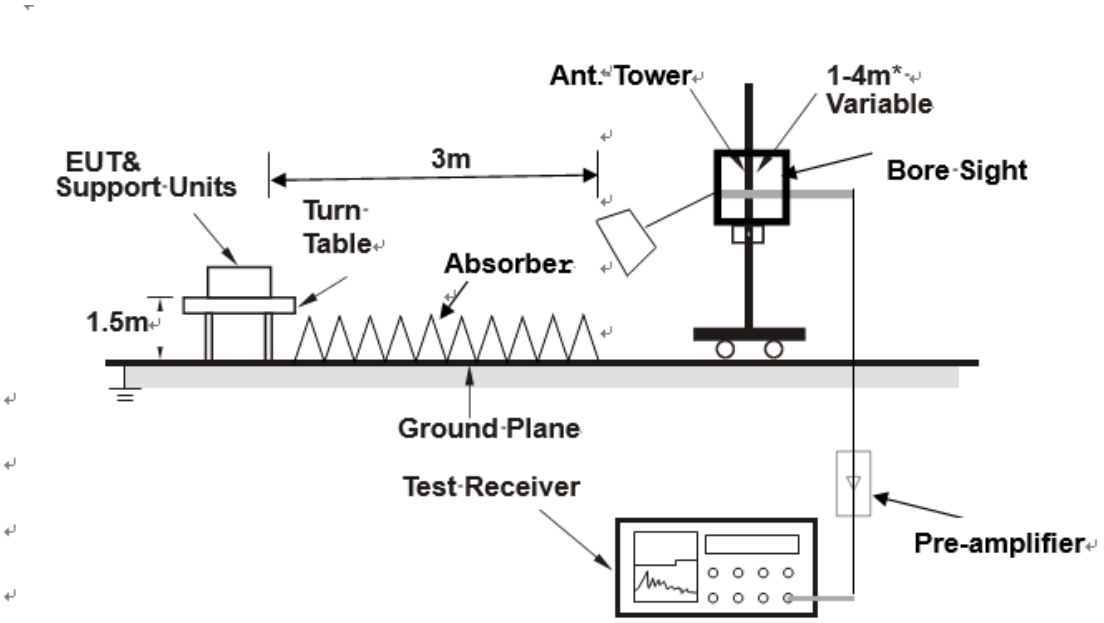
<Frequency Range 9KHz~30MHz >



< 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

a. Set the EUT under full load condition and placed them on a testing table.

b. Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.

c. 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.

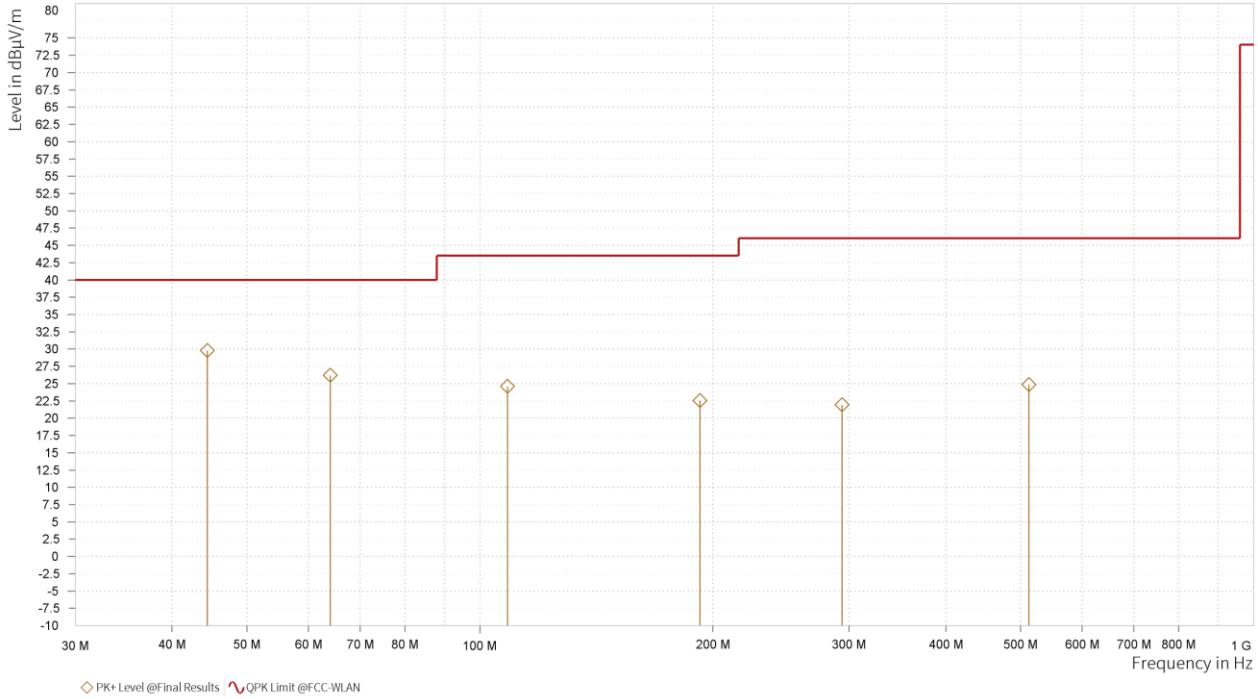
WLAN-BT-1DH5-CH78+WCDMA-B5-MID:

BELOW 1GHz WORST-CASE DATA:

30 MHz – 1GHz data:

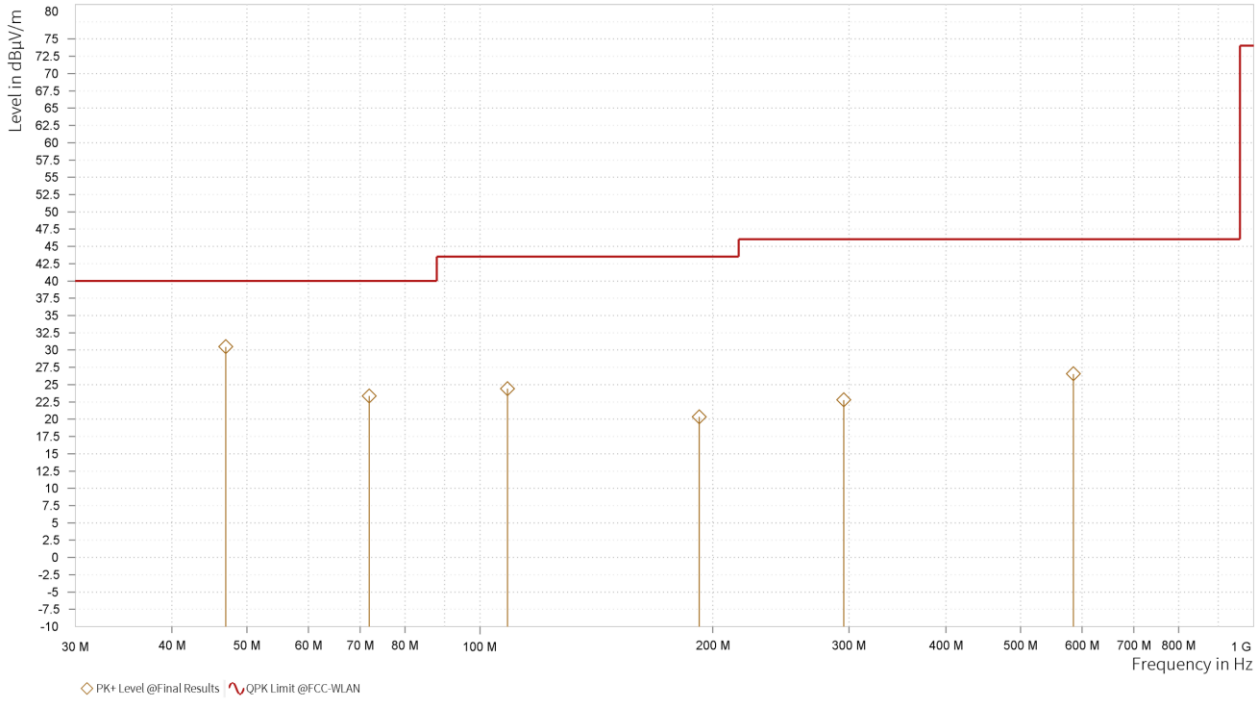
CHANNEL	WLAN-BT-1DH5-CH78+WCDMA-B5-MID	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	44.453	29.76	40.0	10.24	-11.96	H	0.9	2.0
1	64.096	26.19	40.0	13.81	-14.28	H	354.9	2.0
1	108.57	24.58	43.5	18.92	-13.63	H	85.6	2.0
1	192.524	22.55	43.5	20.95	-13.36	H	1.0	1.0
1	293.889	21.93	46.0	24.07	-11.45	H	358.4	1.0
1	512.527	24.86	46.0	21.14	-7.83	H	227.8	2.0



CHANNEL	WLAN-BT-1DH5-CH78+WCDMA-B5-MID	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	46.927	30.46	40.0	9.54	-11.88	V	1.4	2.0
1	71.953	23.35	40.0	16.65	-16.99	V	359.1	1.0
1	108.522	24.4	43.5	19.1	-13.63	V	1.0	2.0
1	192.136	20.32	43.5	23.18	-13.39	V	355.0	2.0
1	295.295	22.77	46.0	23.23	-11.48	V	230.3	2.0
1	584.743	26.53	46.0	19.47	-6.32	V	1.0	1.0



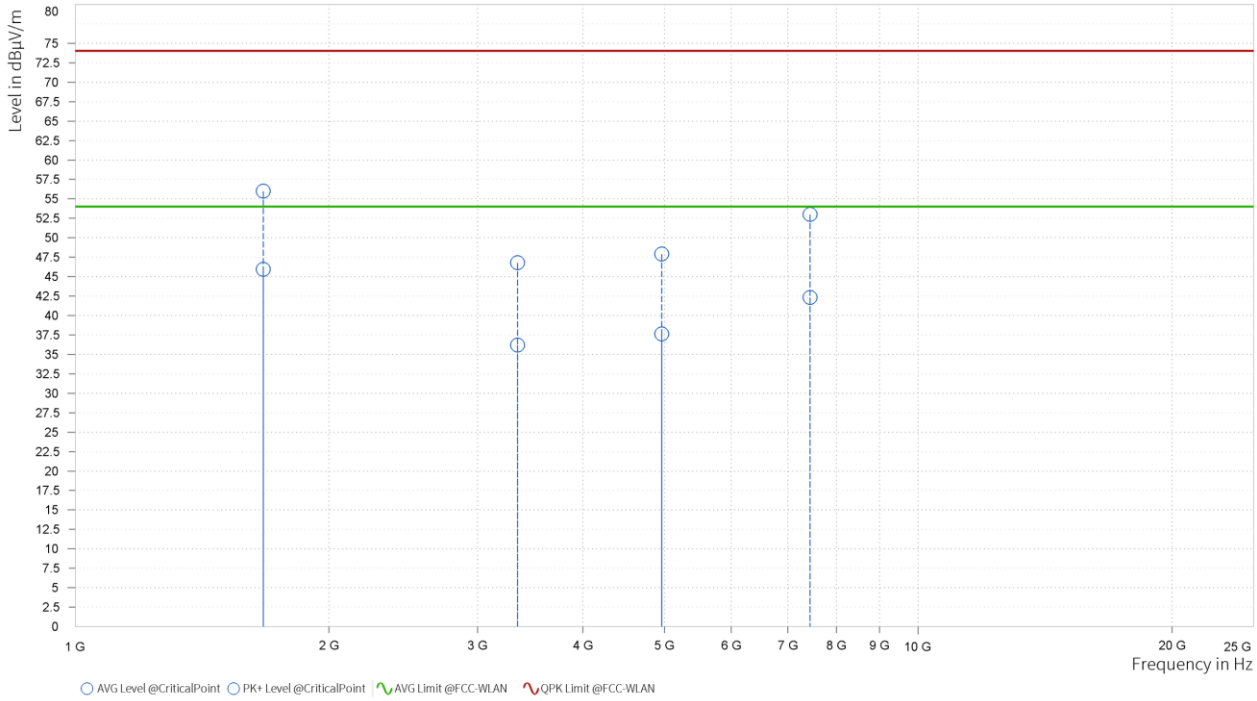
ABOVE 1GHz WORST-CASE DATA:

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

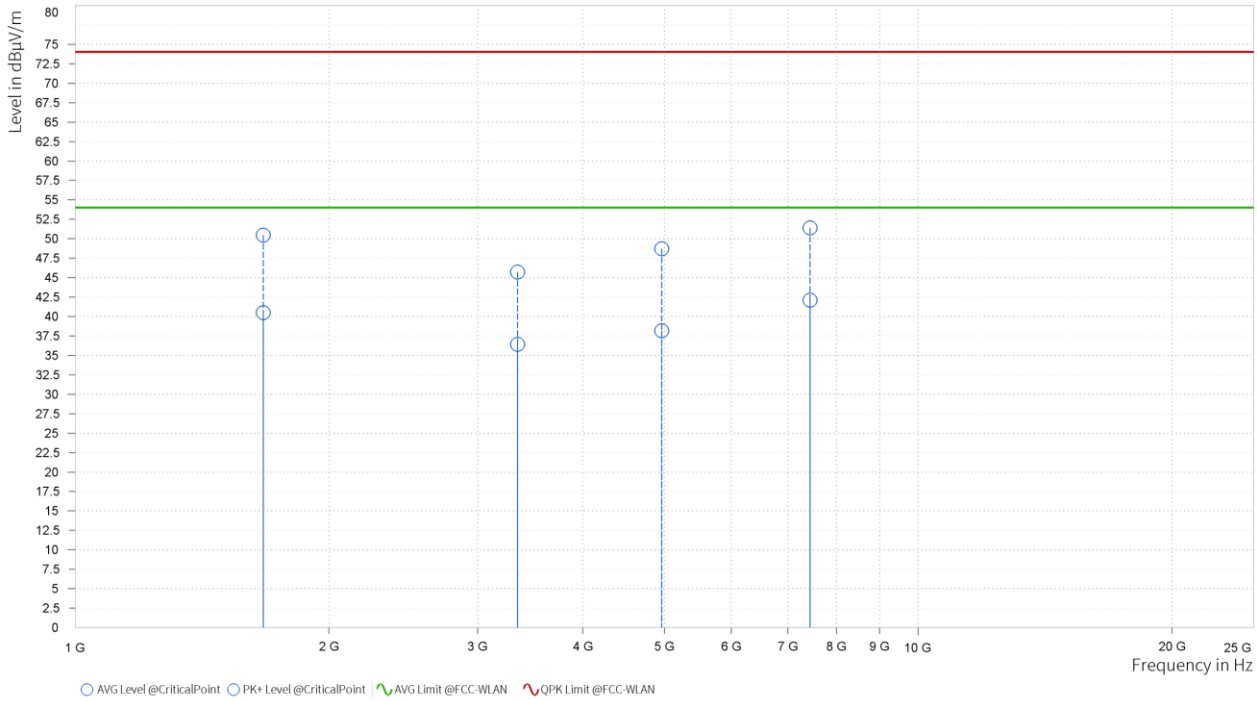
CHANNEL	WLAN-BT-1DH5-CH78+WCDMA-B5-MID	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,671.000	56.0	74.0	18.0	45.96	54.0	8.04	6.37	H	5.8	1.0
3	3,345.600	46.77	74.0	27.23	36.19	54.0	17.81	12.22	H	359.0	2.0
3	4,960.000	47.9	74.0	26.1	37.65	54.0	16.35	13.52	H	0.9	2.0
3	7,440.000	53.0	74.0	21.0	42.31	54.0	11.69	18.23	H	359.0	2.0



CHANNEL	WLAN-BT-1DH5-CH78+WCDMA-B5-MID	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,671.000	50.46	74.0	23.54	40.49	54.0	13.51	6.37	V	359.0	2.0
3	3,345.600	45.72	74.0	28.28	36.41	54.0	17.59	12.22	V	359.1	1.0
3	4,960.000	48.72	74.0	25.28	38.16	54.0	15.84	13.52	V	238.6	1.0
3	7,440.000	51.41	74.0	22.59	42.08	54.0	11.92	18.23	V	0.9	2.0



Note: For frequency above 18GHz, the emission was tested 20db below the limit so the data not recorded in the sheet.

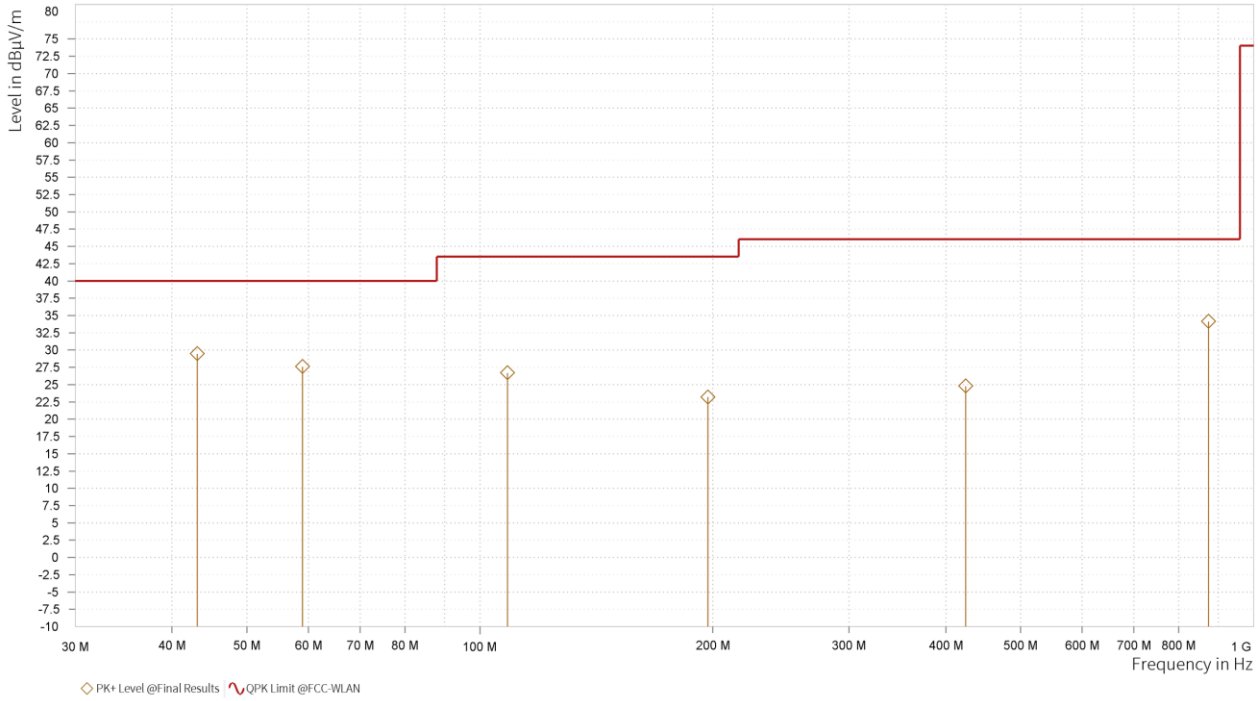
WLAN-BT-1DH5-CH78+LTE-B2-MID-10M:

BELOW 1GHz WORST-CASE DATA:

30 MHz – 1GHz data:

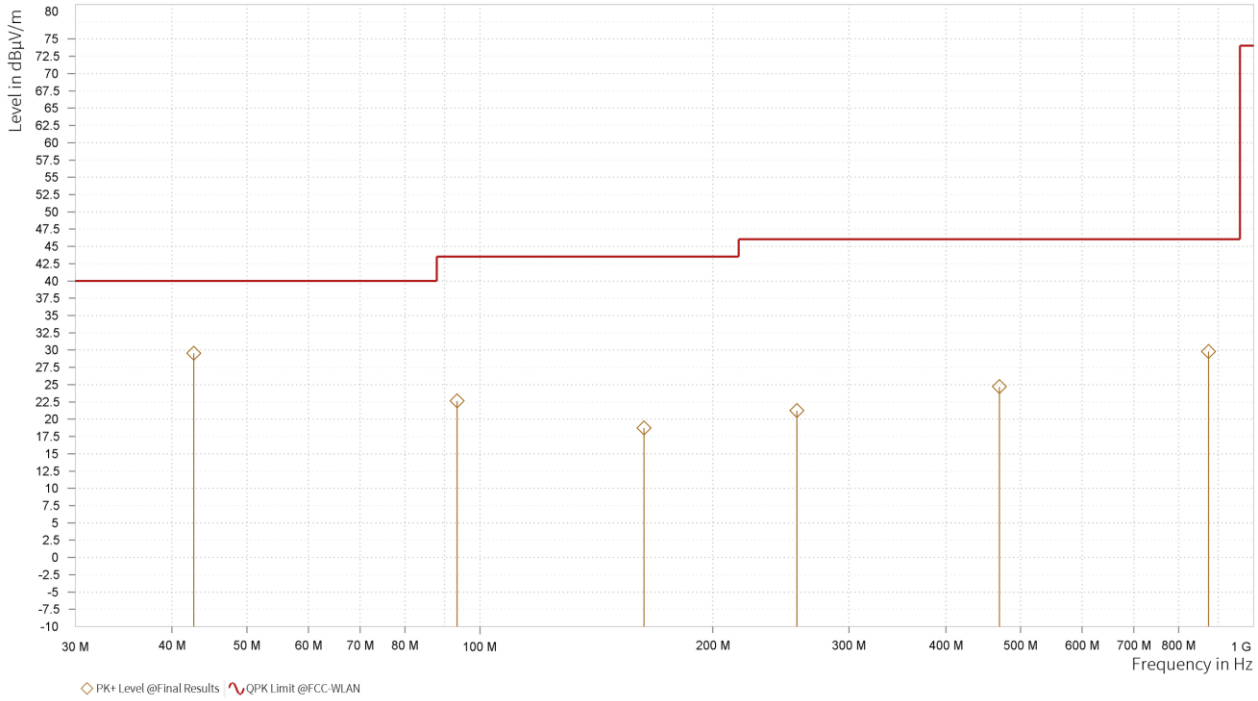
CHANNEL	WLAN-BT-1DH5-CH78+LTE-B2-MID-10M	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	43.144	29.46	40.0	10.54	-11.92	H	354.2	2.0
1	59.003	27.59	40.0	12.41	-13.64	H	150.2	1.0
1	108.522	26.7	43.5	16.8	-13.63	H	0.9	2.0
1	197.131	23.19	43.5	20.31	-13.03	H	150.2	1.0
1	424.645	24.79	46.0	21.21	-8.71	H	354.2	2.0
1	873.949	34.14	46.0	11.86	-2.13	H	287.6	1.0



CHANNEL	WLAN-BT-1DH5-CH78+LTE-B2-MID-10M	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	42.659	29.53	40.0	10.47	-11.98	V	229.0	2.0
1	93.438	22.62	43.5	20.88	-15.03	V	359.0	2.0
1	162.939	18.72	43.5	24.78	-15.88	V	0.9	2.0
1	256.738	21.21	46.0	24.79	-11.72	V	1.0	1.0
1	469.071	24.69	46.0	21.31	-8.4	V	129.8	1.0
1	874.046	29.79	46.0	16.21	-2.13	V	1.4	2.0



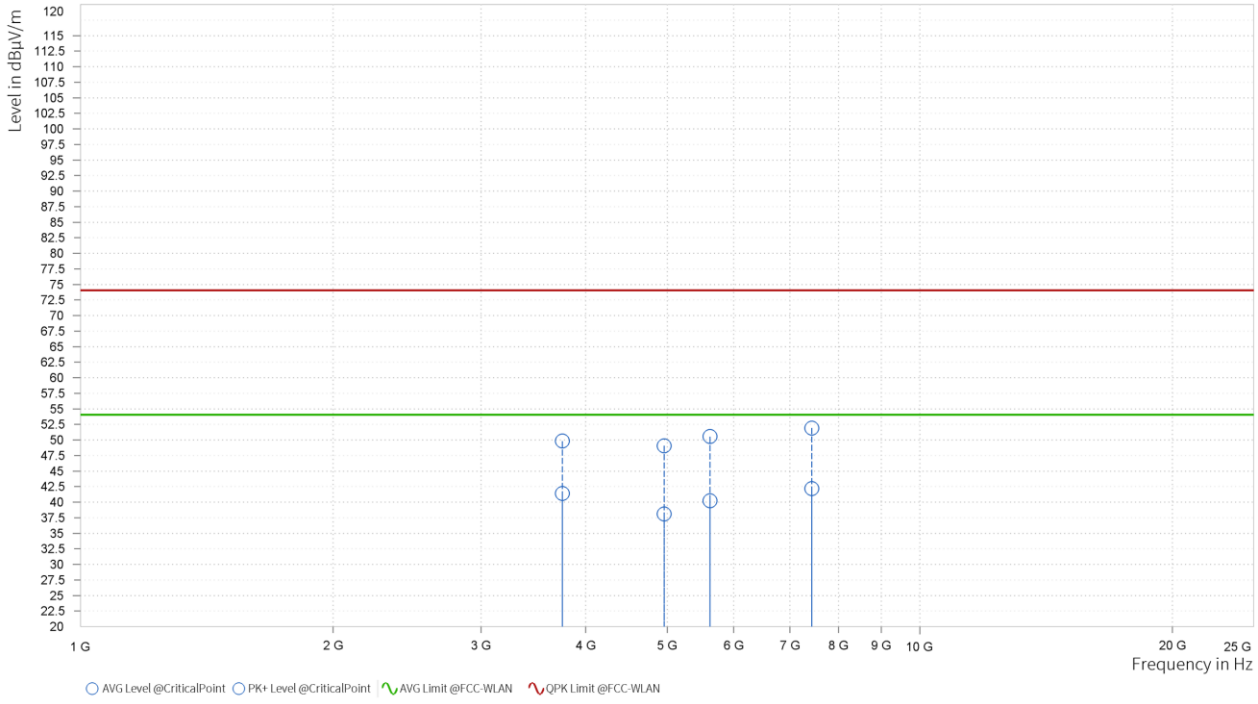
ABOVE 1GHz WORST-CASE DATA:

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

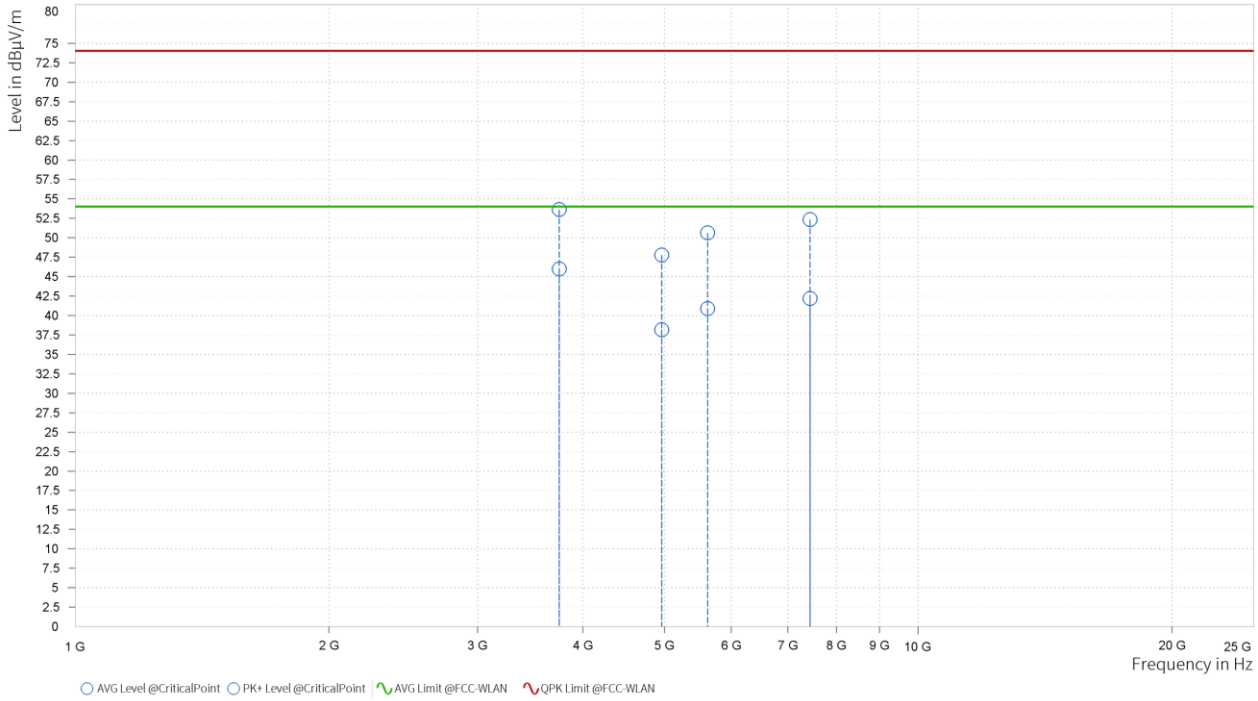
CHANNEL	WLAN-BT-1DH5-CH78+LTE-B2-MID-10M	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	3,751.000	49.81	74.0	24.19	41.42	54.0	12.58	12.3	H	243.4	1.0
3	4,960.000	49.06	74.0	24.94	38.09	54.0	15.91	13.52	H	1.0	1.0
3	5,626.500	50.54	74.0	23.46	40.23	54.0	13.77	17.05	H	359.1	1.0
3	7,440.000	51.91	74.0	22.09	42.21	54.0	11.79	18.23	H	0.9	2.0



CHANNEL	WLAN-BT-1DH5-CH78+LTE-B2-MID-10M	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	3,751.000	53.62	74.0	20.38	45.97	54.0	8.03	12.3	V	359.1	1.0
3	4,960.000	47.76	74.0	26.24	38.19	54.0	15.81	13.52	V	1.0	1.0
3	5,626.500	50.63	74.0	23.37	40.91	54.0	13.09	17.05	V	359.1	1.0
3	7,440.000	52.32	74.0	21.68	42.18	54.0	11.82	18.23	V	359.1	1.0



Note: For frequency above 18GHz, the emission was tested 20db below the limit so the data not recorded in the sheet.

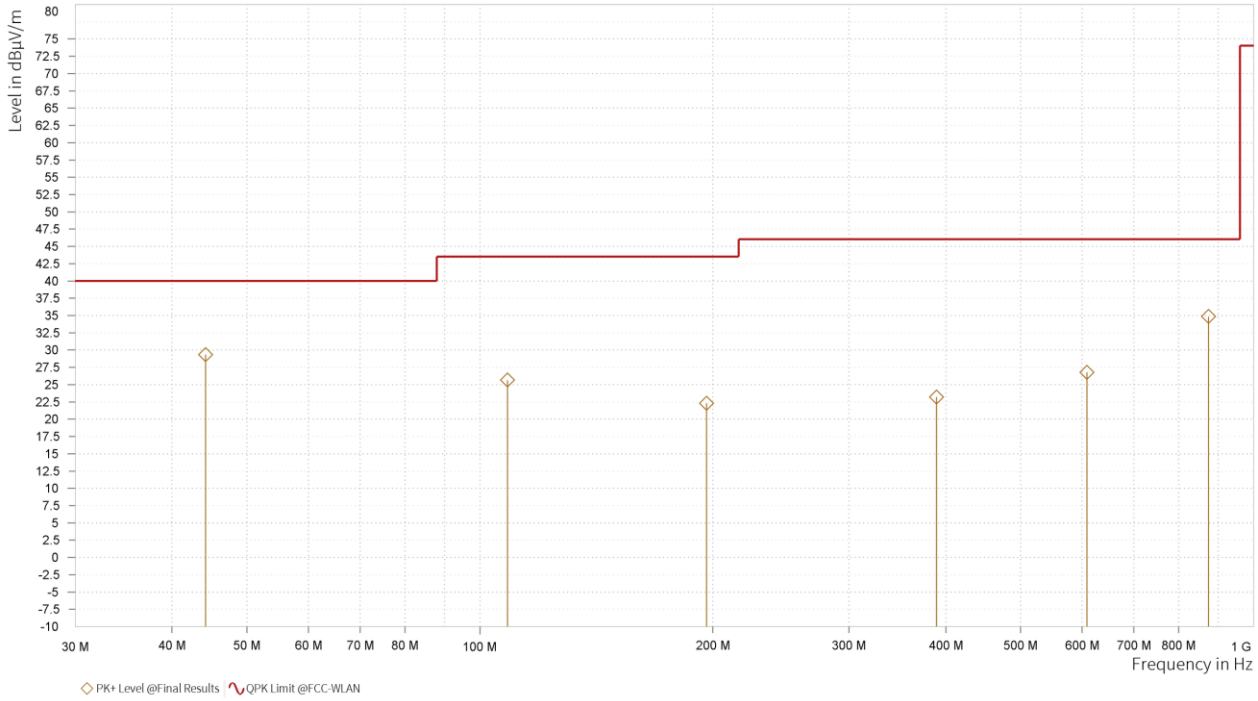
WLAN-BT-1DH5-CH78+LTE-B41-MID-15M :

BELOW 1GHz WORST-CASE DATA:

30 MHz – 1GHz data:

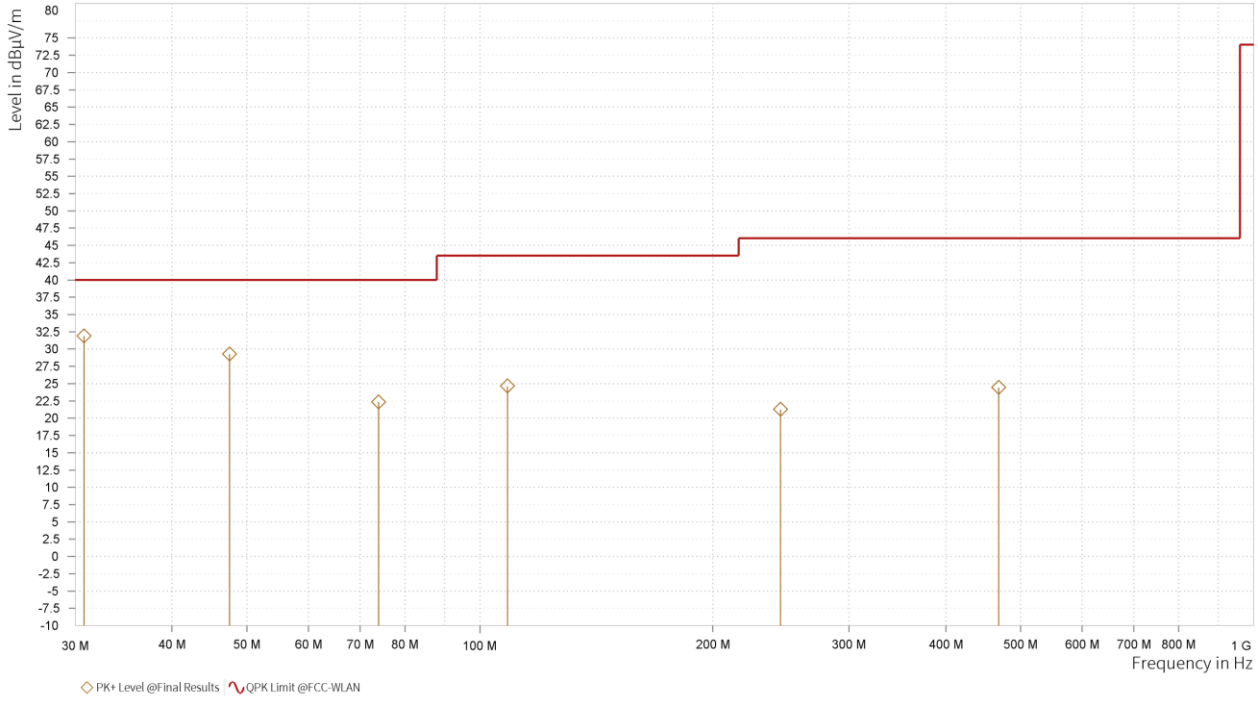
CHANNEL	WLAN-BT-1DH5-CH78+LTE-B41-MID-15M	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	44.211	29.32	40.0	10.68	-11.97	H	229.0	2.0
1	108.57	25.63	43.5	17.87	-13.63	H	94.0	2.0
1	196.355	22.3	43.5	21.2	-13.06	H	266.0	1.0
1	389.288	23.2	46.0	22.8	-9.01	H	5.1	1.0
1	608.605	26.76	46.0	19.24	-6.02	H	229.0	2.0
1	873.997	34.83	46.0	11.17	-2.13	H	266.0	1.0



CHANNEL	WLAN-BT-1DH5-CH78+LTE-B41-MID-15M	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	30.776	31.88	40.0	8.12	-14.94	V	230.3	2.0
1	47.46	29.27	40.0	10.73	-11.93	V	1.0	1.0
1	73.99	22.35	40.0	17.65	-17.58	V	230.3	2.0
1	108.57	24.64	43.5	18.86	-13.63	V	1.5	2.0
1	244.661	21.26	46.0	24.74	-11.82	V	1.0	2.0
1	468.246	24.42	46.0	21.58	-8.42	V	230.3	2.0



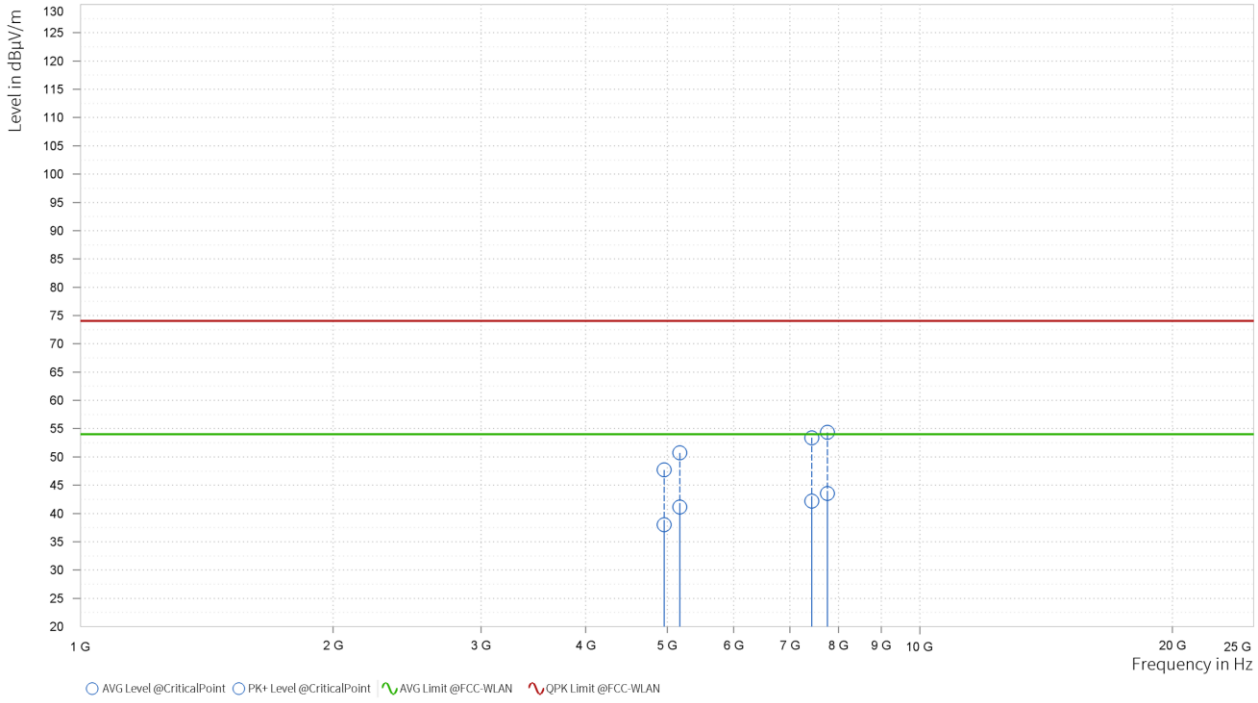
ABOVE 1GHz WORST-CASE DATA:

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

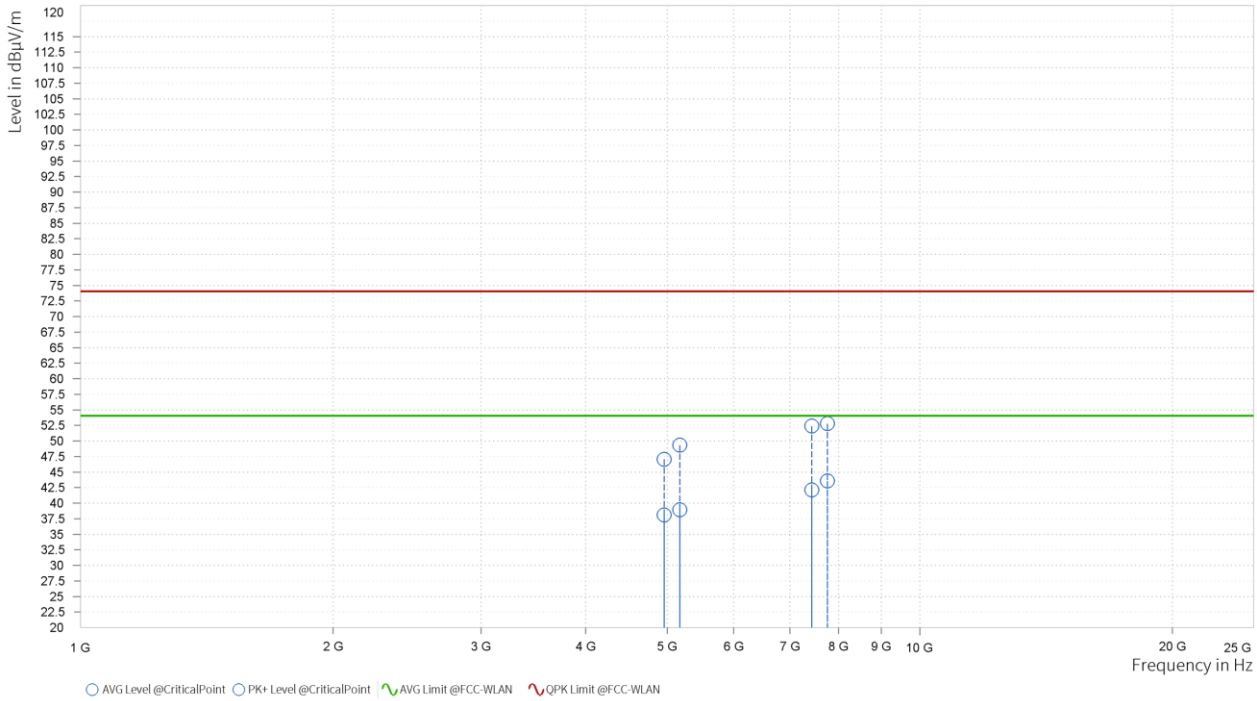
CHANNEL	WLAN-BT-1DH5-CH78+LTE-B41-MID-15M	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	4,960.000	47.69	74.0	26.31	38.03	54.0	15.97	13.52	H	1	2.0
3	5,177.000	50.7	74.0	23.3	41.11	54.0	12.89	14.82	H	1	1.0
3	7,440.000	53.38	74.0	20.62	42.16	54.0	11.84	18.23	H	1	2.0
3	7,764.750	54.33	74.0	19.67	43.54	54.0	10.46	20.0	H	1	2.0



CHANNEL	WLAN-BT-1DH5-CH78+LTE-B41-MID-15M	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	4,960.000	47.04	74.0	26.96	38.08	54.0	15.92	13.52	V	359.0	2.0
3	5,176.500	49.32	74.0	24.68	38.94	54.0	15.06	14.81	V	0.9	2.0
3	7,440.000	52.39	74.0	21.61	42.1	54.0	11.9	18.23	V	0.9	2.0
3	7,764.750	52.79	74.0	21.21	43.55	54.0	10.45	20.0	V	359.1	1.0



Note: For frequency above 18GHz, the emission was tested 20db below the limit so the data not recorded in the sheet.

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