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:	Smart Phone
Brand Name:	NOKIA
Model Name:	TA-1513
FCC ID:	2AJOTTA-1513
Date of tests:	Sep. 26, 2022 ~ Nov. 18, 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**
☒ **FCC Part 27** ☒ **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 Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
Simon Wang Date: Dec. 05, 2022	Luke Lu Date: Dec. 05, 2022

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P22110014RF06	Original release	Dec. 05, 2022

1 GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Smart Phone	
BRAND NAME	NOKIA	
MODEL NAME	TA-1513	
NOMINAL VOLTAGE	5.0Vdc(adapter or host equipment) 3.8Vdc (Li-ion, battery)	
MODULATION TYPE	**BT_LE**	GFSK
	Bluetooth	GFSK, π/4-DQPSK, 8DPSK
	FM	FM
	WLAN	DSSS, OFDM
	GPS	BPSK
	GSM/GPRS/EDGE	GMSK, 8PSK
	WCDMA	QPSK
	LTE	QPSK/16QAM
OPERATING FREQUENCY **OPERATING FREQUENCY**	**Bluetooth/BT_LE**	2402MHz ~ 2480MHz
	FM	87.5MHz ~ 108MHz
	WLAN	2412 ~ 2462MHz for 11b/g/n(HT20)
	GPS	1559MHz ~ 1610MHz
	GSM	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) 699.7MHz ~ 715.3MHz (FOR LTE Band12) 779.5MHz ~ 784.5MHz (FOR LTE Band13) 706.5MHz ~ 713.5MHz (FOR LTE Band17) 1710.7MHz ~ 1779.3MHz (FOR LTE Band66)
HW VERSION	V01	
SW VERSION	00WW_0_010	

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, 1.2 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.

3. **List of Accessory:**

ACCESSORIES	BRAND	MANUFACTURER	MODEL	SPECIFICATION
Battery	NOKIA	Shenzhen Aerospace Electronic Co., Ltd	BL-29CI	Capacity：3.8Vdc, 3000mAh
AC Adapter	NOKIA	Dongguan Aohai Technology Co., Ltd.	A18A-050100U-US2	I/P: 100-240Vac, 0.2A, O/P: 5.0Vdc, 1.0A
AC Adapter	NOKIA	Shenzhen Baijunda Electronic Co.,Ltd	AD-005U	I/P: 100-240Vac, 0.2A, O/P: 5.0Vdc, 1.0A
Earphone	N/A	Hui Zhou JuWei Electronic Co., Ltd	JWEP1199-M01H	Signal Line, 1.2meter
USB Cable	N/A	Hui Zhou JuWei Electronic Co., Ltd	JWUB1480-M01H	Signal Line, 1.0meter

2 SUMMARY OF TEST RESULTS

2.1 TEST RESULTS

TEST TYPE	Result
Radiated Emissions	Pass

Note: This report refers to the data of W7L-P22090023RF06（FCC ID: 2AJOTTA-1508）, the difference of TA-1508 and TA-1513 is TA-1508 is double SIM, TA-1513 is single SIM, change model name and FCC ID, in this report all data is refer to the original report.

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~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.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 21,22	Feb. 20,23
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.15,22	May.14,23
Loop Antenna	Schwarzbeck	FMZB 1519B	00173	Sep.04,22	Sep.03,23
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. 24, 22	Aug. 23, 23
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 15,22	Feb. 14,23
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
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	May. 19,20	May. 18,23
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	JS1120	3.1.36	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	May. 07,22	May. 06,23
Power Meter	Anritsu	ML2495A	1506002	Feb. 22,22	Feb. 21,23
Power Sensor	Anritsu	MA2411B	1339352	May. 07,22	May. 06,23
Temperature Chamber	ESPEC	SH-242	93000855	May. 12,22	May. 11,23
MXG Analog Microvave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 18,22	Feb. 17,23
Base station R&S CMW500	Rohde&Schwarz	CMW500	153085	May.12,22	May.11,23
DC Source	Kikusui/JP	PMX18-5A	0000001	Aug. 24,22	Aug. 23,23

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 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 525120; The Designation No. is CN1171.

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/BLE/2.4G WIFI
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

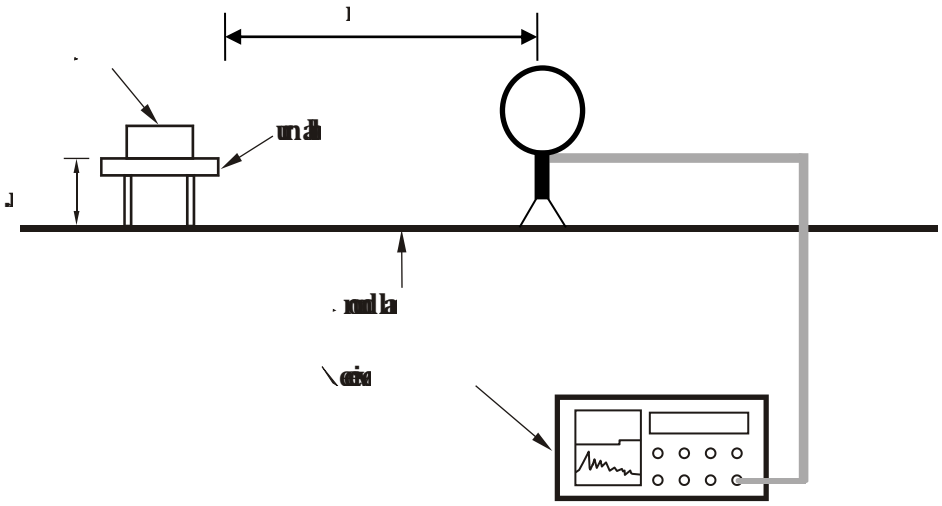
Test Configurations	Description
Worst case test Mode	
1	2.4G WIFI(N20-CH 6)+EDGE 1900(CH 810)
2	2.4G WIFI(N20-CH 6)+LTE B13(5M CH 20325)
3	BT2.0 (2DH5 CH 39)+GSM 850 (CH 251)

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

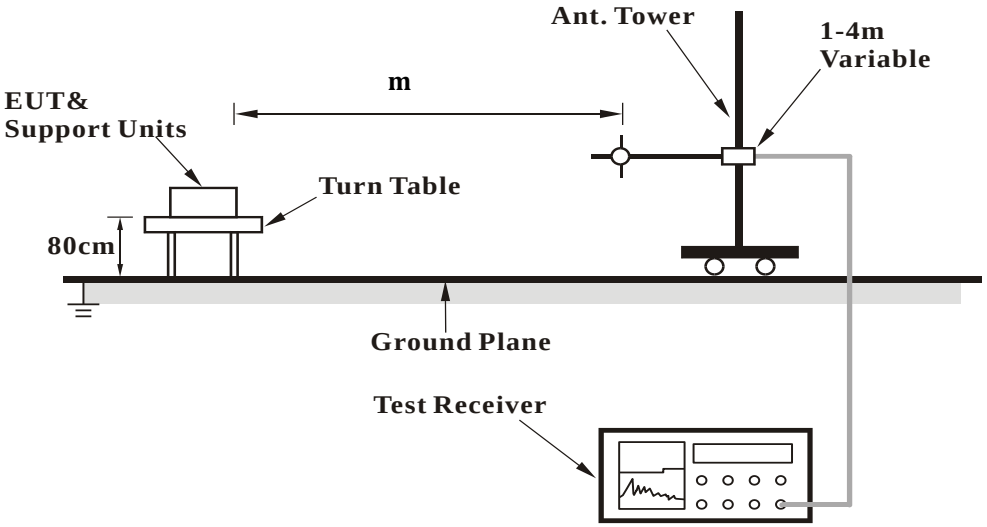
2. For higher frequency, the emission is 20dB below the limit was not record

2.6 Test Data

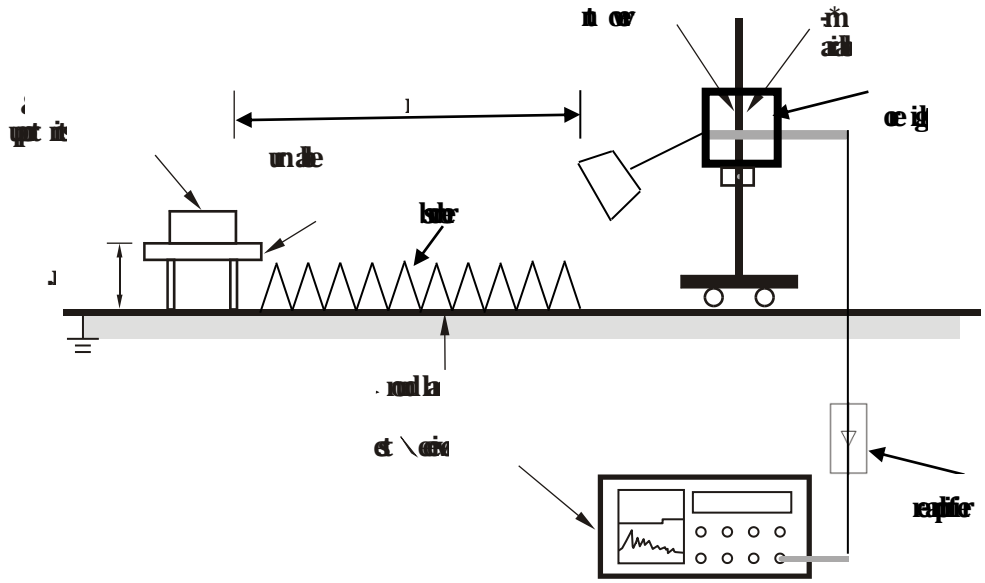
<Frequency Range 9KHz~30MHz >



< 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

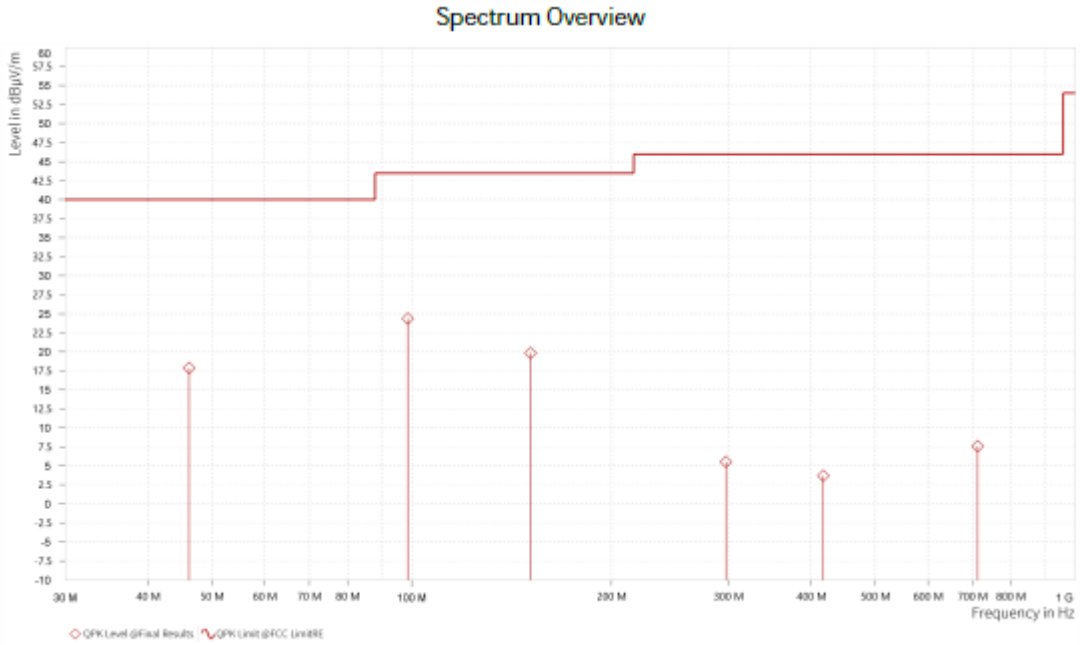
NOTE ： The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

2.4G WIFI(N20-CH6)+EDGE 1900(CH 810):

BELOW 1GHz WORST-CASE DATA:

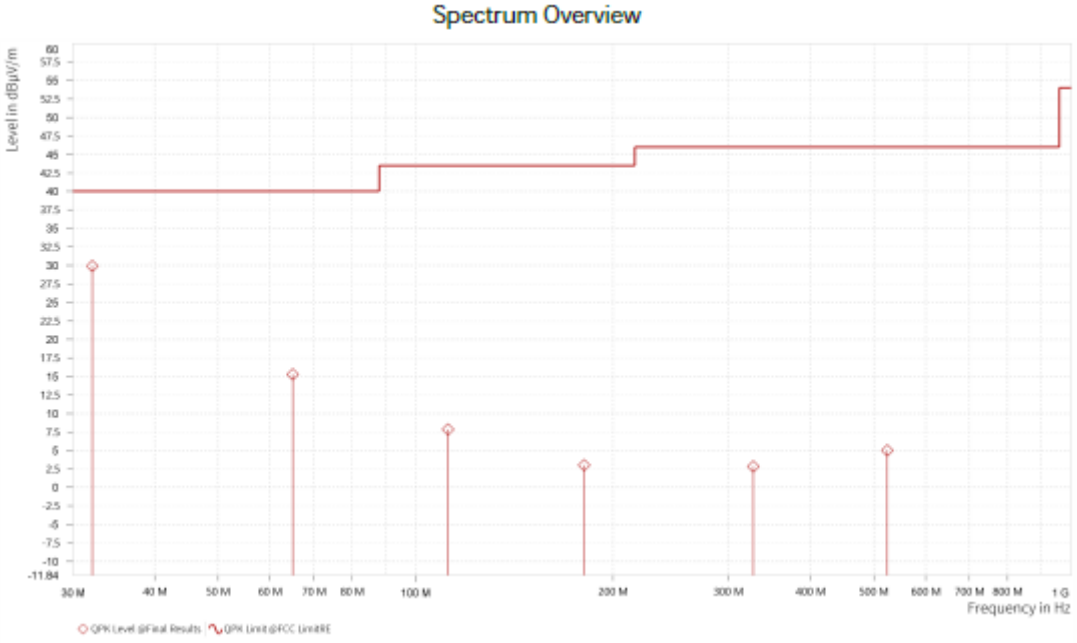
30 MHz – 1GHz data:

CHANNEL	2.4G WIFI(N20-CH6)+EDGE 1900(CH 810)	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		



Rg	Frequency [MHz]	QPK Level [dBµV/m]	QPK Limit [dBµV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	46.102	17.85	40.00	22.15	-16.95	H	1	2	120.000
1	98.579	24.38	43.50	19.12	-21.25	H	89.2	2	120.000
1	151.008	19.81	43.50	23.69	-25.62	H	270.7	1	120.000
1	297.478	5.53	46.00	40.47	-21.71	H	355	2	120.000
1	417.321	3.71	46.00	42.29	-19.65	H	4.4	1	120.000
1	713.026	7.59	46.00	38.41	-15.05	H	133.3	1	120.000

CHANNEL	2.4G WIFI(N20-CH6)+EDGE 1900(CH 810)	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		



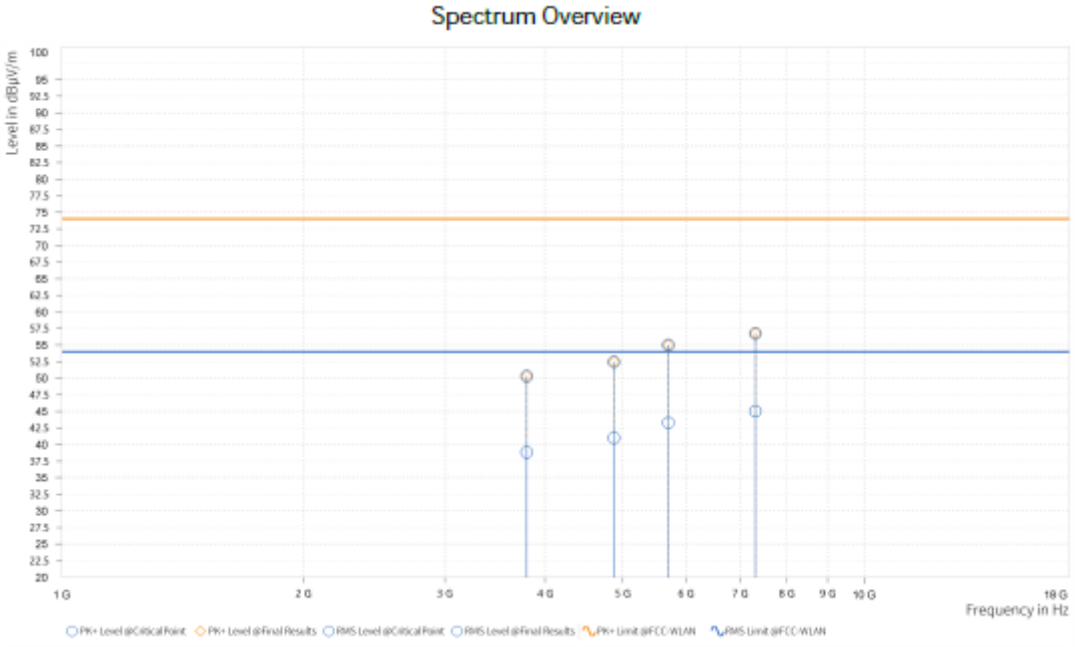
Rg	Frequency [MHz]	QPK Level [dBµV/m]	QPK Limit [dBµV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	32.134	29.92	40.00	10.08	-19.55	V	359	1	120.000
1	64.969	15.27	40.00	24.73	-20.40	V	134.5	1	120.000
1	112.111	7.85	43.50	35.65	-22.37	V	134.5	1	120.000
1	180.738	3.01	43.50	40.49	-25.61	V	134.5	1	120.000
1	327.354	2.83	46.00	43.17	-21.57	V	5.1	1	120.000
1	524.797	5.02	46.00	40.98	-18.25	V	134.5	1	120.000

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.

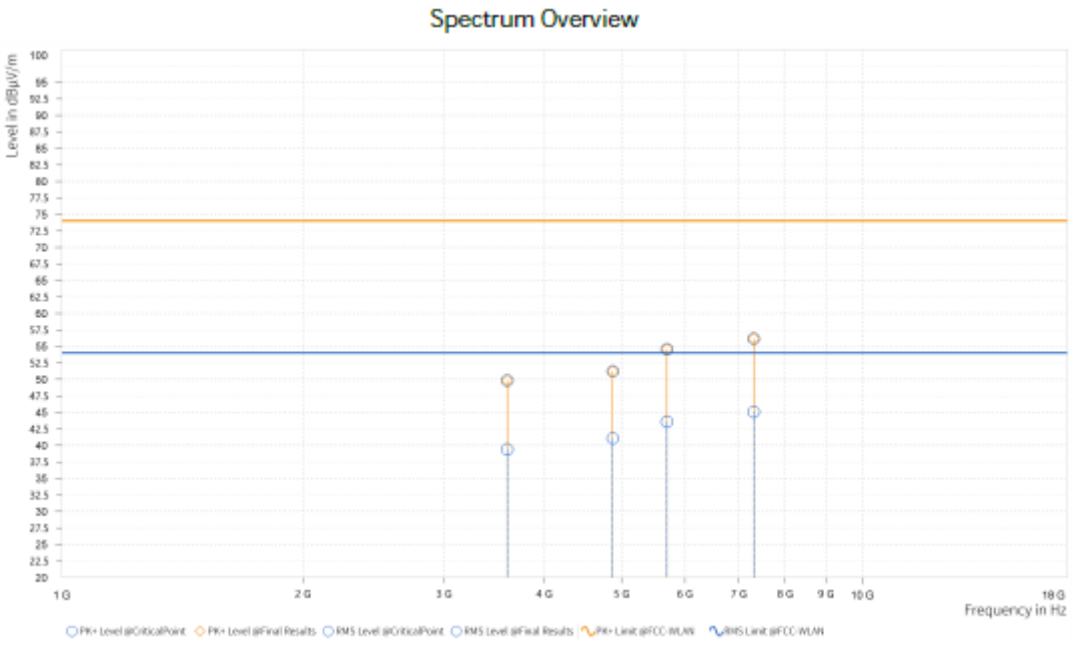
2. All other emissions that more than 20dB below the limit were not recorded

CHANNEL	2.4G WIFI(N20-CH6)+EDGE 1900(CH 810)	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		



Rg	Frequency [MHz]	RMS Level [dBµV/m]	RMS Limit [dBµV/m]	RMS Margin [dB]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	3,794.426	38.82	54.00	15.18	50.26	74.00	23.74	14.40	H	359	1
3	4,873.721	40.98	54.00	13.02	52.45	74.00	21.55	15.94	H	1	2
3	5,697.265	43.31	54.00	10.69	55.01	74.00	18.99	18.81	H	1	2
4	7,317.025	45.04	54.00	8.96	56.73	74.00	17.27	24.01	H	17.6	2

CHANNEL	2.4G WIFI(N20-CH6)+EDGE 1900(CH 810)	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		



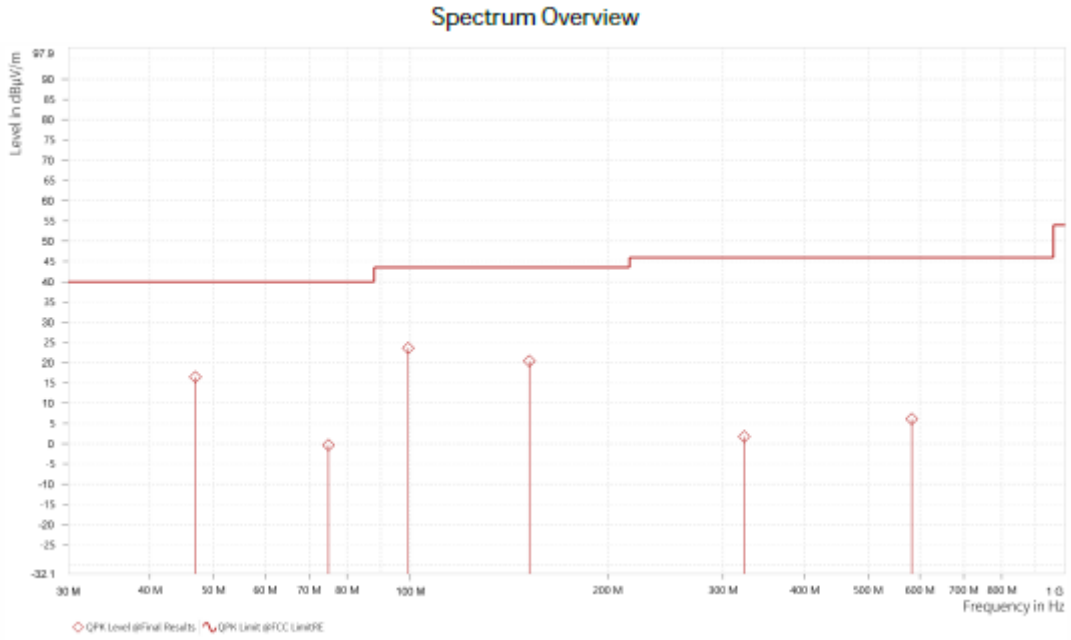
Rg	Frequency [MHz]	RMS Level [dBµV/m]	RMS Limit [dBµV/m]	RMS Margin [dB]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	3,600.309	39.39	54.00	14.61	49.83	74.00	24.17	14.47	V	1	2
3	4,875.662	41.07	54.00	12.93	51.27	74.00	22.73	15.94	V	359	2
3	5,696.294	43.58	54.00	10.42	54.57	74.00	19.43	18.80	V	359	1
4	7,311.075	45.09	54.00	8.91	56.18	74.00	17.82	24.03	V	1	2

2.4G WIFI(N20-CH6)+LTE B13(5M CH 20325):

BELOW 1GHz WORST-CASE DATA:

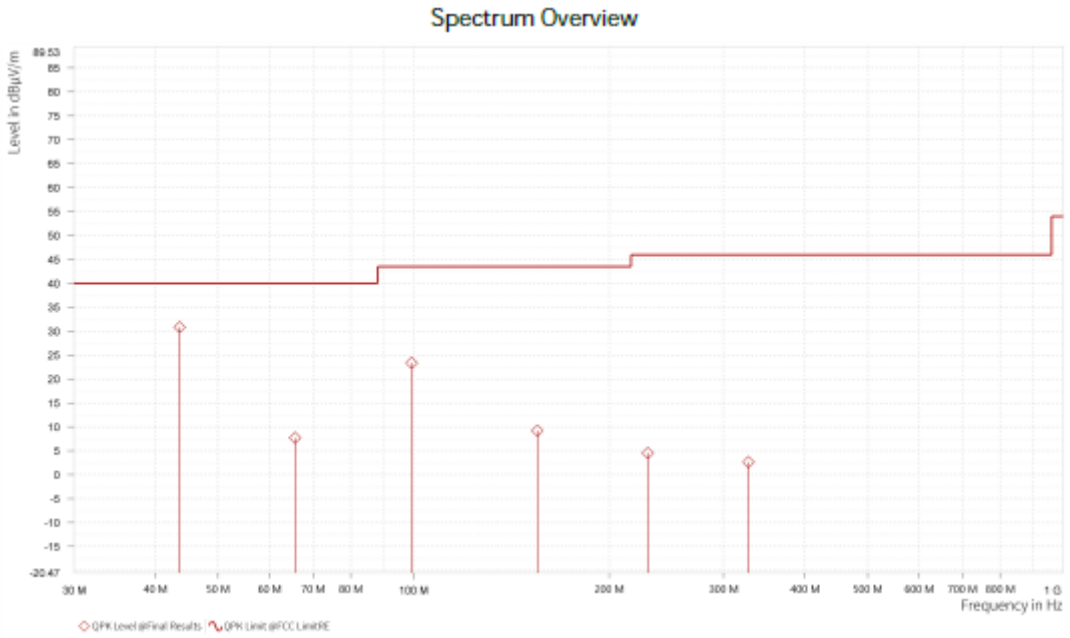
30 MHz – 1GHz data:

CHANNEL	2.4G WIFI(N20-CH6)+LTE B13(5M CH 20325)	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		



Rg	Frequency [MHz]	QPK Level [dBµV/m]	QPK Limit [dBµV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	46.927	16.47	40.00	23.53	-17.07	H	359	2	120.000
1	74.960	-0.35	40.00	40.35	-25.20	H	88	2	120.000
1	99.210	23.59	43.50	19.91	-21.18	H	88	2	120.000
1	151.929	20.38	43.50	23.12	-25.51	H	262.4	1	120.000
1	323.522	1.73	46.00	44.27	-21.99	H	88	2	120.000
1	583.240	6.09	46.00	39.91	-16.64	H	262.4	1	120.000

CHANNEL	2.4G WIFI(N20-CH6)+LTE B13(5M CH 20325)	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		



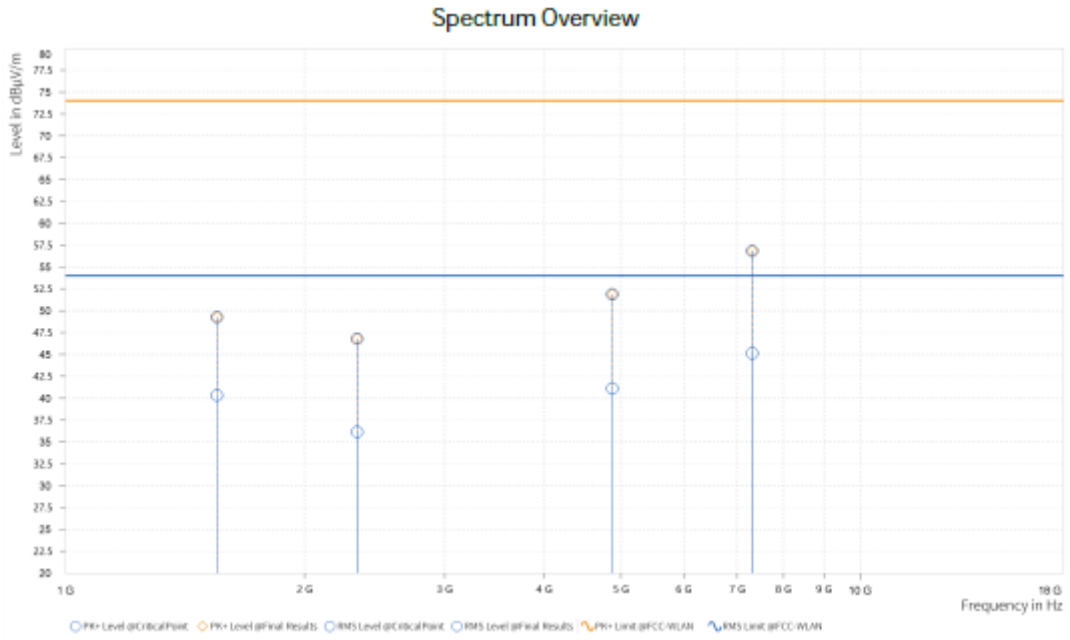
Rg	Frequency [MHz]	QPK Level [dBµV/m]	QPK Limit [dBµV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	43.629	30.85	40.00	9.15	-17.04	V	271.9	1	120.000
1	65.696	7.73	40.00	32.27	-20.78	V	354.9	2	120.000
1	99.307	23.36	43.50	20.14	-21.17	V	135.7	1	120.000
1	155.082	9.19	43.50	34.31	-25.69	V	271.9	1	120.000
1	229.384	4.57	46.00	41.43	-23.28	V	135.7	1	120.000
1	327.596	2.63	46.00	43.37	-21.53	V	135.7	1	120.000

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.

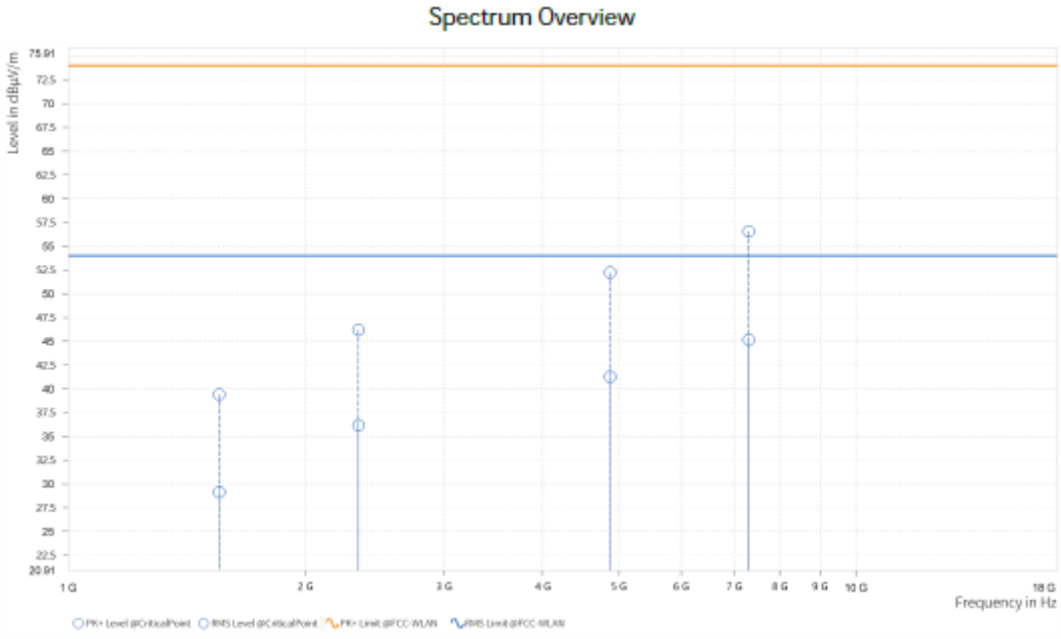
2. All other emissions that more than 20dB below the limit were not recorded

CHANNEL	2.4G WIFI(N20-CH6)+LTE B13(5M CH 20325)	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		



Rg	Frequency [MHz]	RMS Level [dBµV/m]	RMS Limit [dBµV/m]	RMS Margin [dB]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,551.806	40.31	54.00	13.69	49.27	74.00	24.73	3.58	H	354.8	2
1	2,328.900	36.14	54.00	17.86	46.79	74.00	27.21	10.63	H	1	1
3	4,874.206	41.11	54.00	12.90	51.89	74.00	22.11	15.94	H	128.5	2
4	7,311.500	45.12	54.00	8.88	56.82	74.00	17.18	24.03	H	359	1

CHANNEL	2.4G WIFI(N20-CH6)+LTE B13(5M CH 20325)	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		



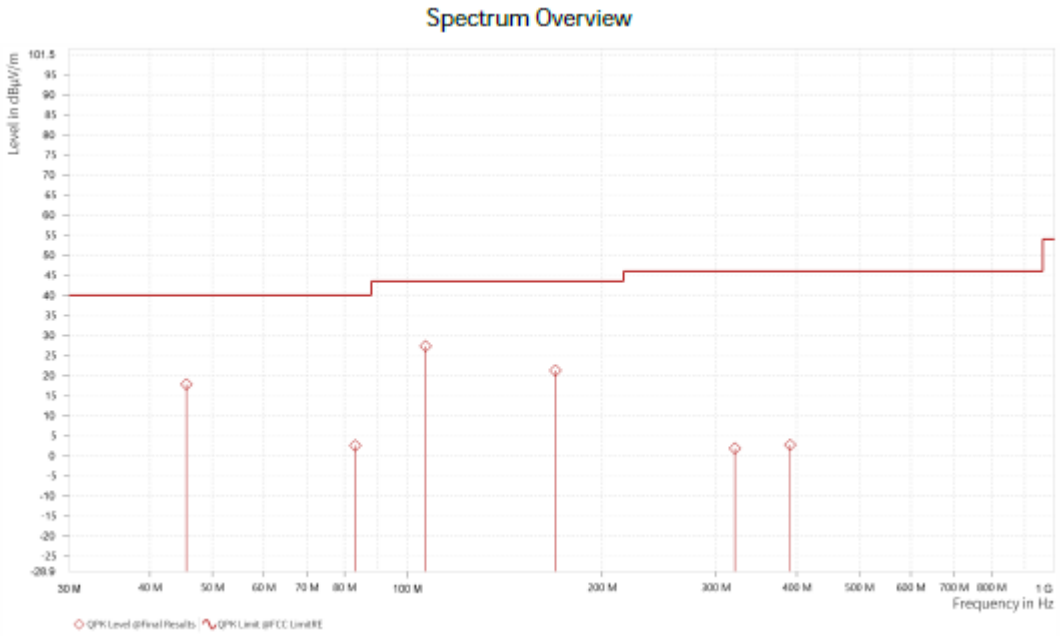
Rg	Frequency [MHz]	RMS Level [dBµV/m]	RMS Limit [dBµV/m]	RMS Margin [dB]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,554.089	29.12	54.00	24.88	39.39	74.00	34.61	3.59	V	359	2
1	2,334.989	36.18	54.00	17.82	46.18	74.00	27.82	10.54	V	5.2	1
3	4,872.750	41.27	54.00	12.73	52.24	74.00	21.76	15.94	V	126.1	2
4	7,305.550	45.15	54.00	8.85	56.54	74.00	17.46	24.06	V	359	1

BT2.0 (2DH5 CH 39)+GSM 850 (CH 251):

BELOW 1GHz WORST-CASE DATA:

30 MHz – 1GHz data:

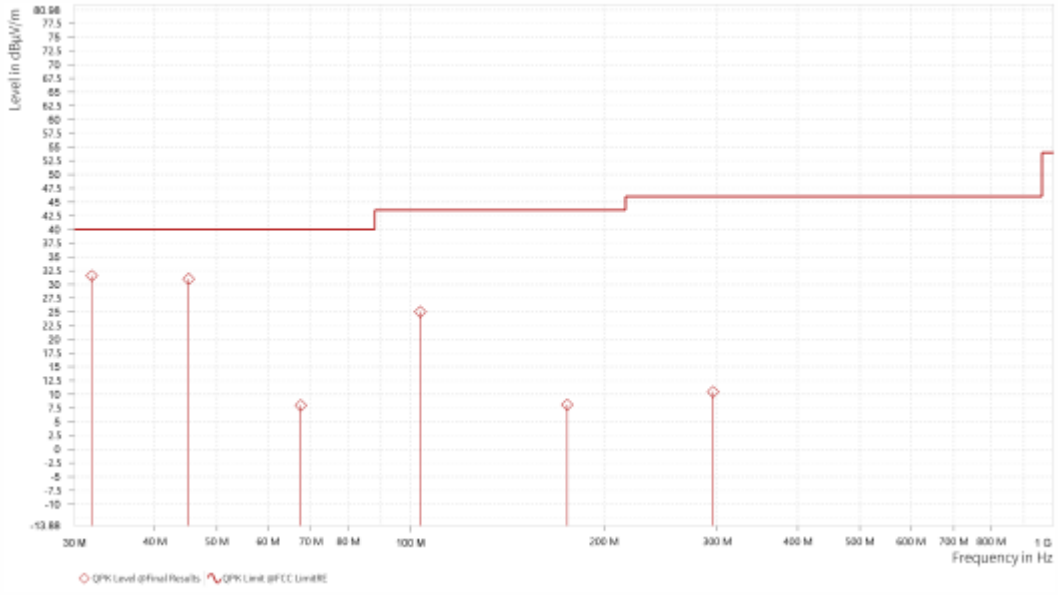
CHANNEL	BT2.0 (2DH5 CH 39)+GSM 850 (CH 251)	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		



Rg	Frequency [MHz]	QPK Level [dBµV/m]	QPK Limit [dBµV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	45.569	17.75	40.00	22.25	-16.93	H	359	2	120.000
1	83.108	2.48	40.00	37.52	-24.20	H	86.8	2	120.000
1	106.679	27.31	43.50	16.19	-22.27	H	86.8	2	120.000
1	169.438	21.21	43.50	22.29	-25.21	H	273.1	1	120.000
1	321.049	1.81	46.00	44.19	-21.90	H	86.8	2	120.000
1	390.549	2.66	46.00	43.34	-20.13	H	225.4	2	120.000

CHANNEL	BT2.0 (2DH5 CH 39)+GSM 850 (CH 251)	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

Spectrum Overview



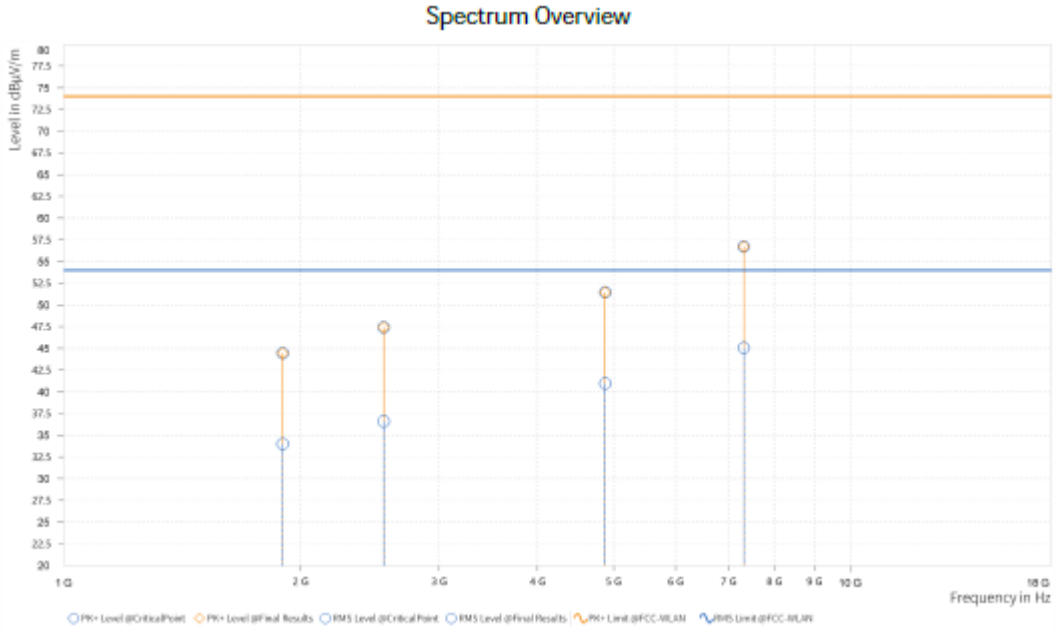
Rg	Frequency [MHz]	QPK Level [dBµV/m]	QPK Limit [dBµV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	31.940	31.57	40.00	8.43	-19.50	V	271.9	1	120.000
1	45.181	30.99	40.00	9.01	-16.94	V	134.5	1	120.000
1	67.491	7.96	40.00	32.04	-21.88	V	271.9	1	120.000
1	103.623	25.02	43.50	18.48	-21.60	V	225.4	2	120.000
1	175.355	8.09	43.50	35.41	-25.62	V	134.5	1	120.000
1	295.586	10.45	46.00	35.55	-21.76	V	5	1	120.000

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.

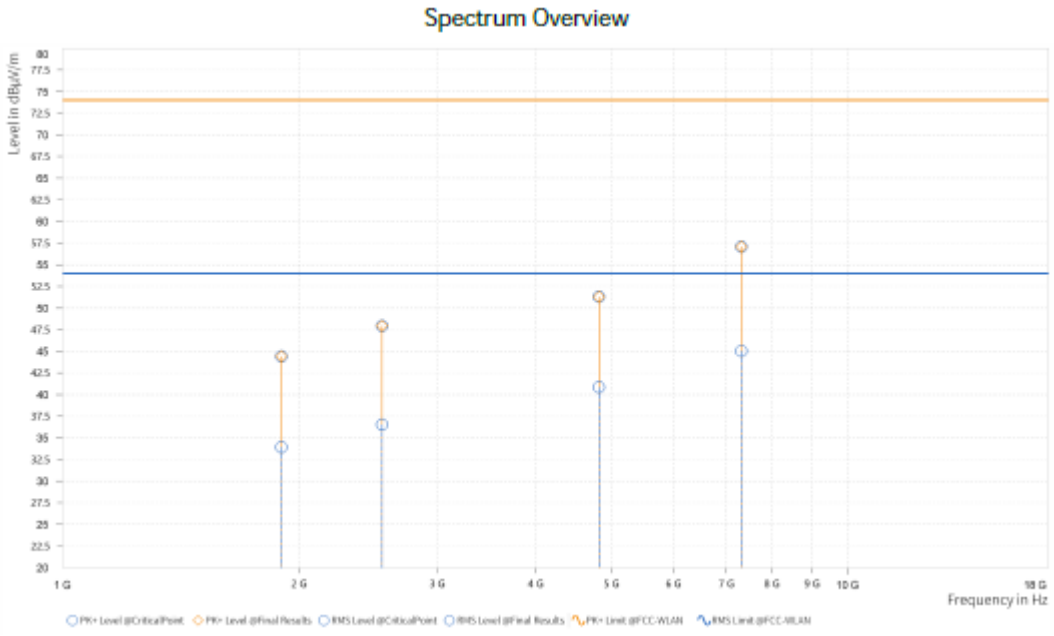
2. All other emissions that more than 20dB below the limit were not recorded

CHANNEL	BT2.0 (2DH5 CH 39)+GSM 850 (CH 251)	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		



Rg	Frequency [MHz]	RMS Level [dBµV/m]	RMS Limit [dBµV/m]	RMS Margin [dB]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,898.872	34.01	54.00	19.99	44.44	74.00	29.56	8.53	H	1	1
2	2,550.720	36.59	54.00	17.41	47.42	74.00	26.58	11.20	H	1	2
3	4,878.088	40.94	54.00	13.06	51.46	74.00	22.54	15.95	H	129.8	2
4	7,320.425	45.05	54.00	8.95	56.71	74.00	17.29	24.02	H	1	2

CHANNEL	BT2.0 (2DH5 CH 39)+GSM 850 (CH 251)	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		



Rg	Frequency [MHz]	RMS Level [dBµV/m]	RMS Limit [dBµV/m]	RMS Margin [dB]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,900.014	33.91	54.00	20.09	44.43	74.00	29.57	8.53	V	1	1
2	2,551.680	36.54	54.00	17.46	47.96	74.00	26.04	11.22	V	359	2
3	4,820.824	40.86	54.00	13.14	51.29	74.00	22.71	15.80	V	1	1
4	7,319.575	45.03	54.00	8.97	57.08	74.00	16.92	24.02	V	359	1

--END--