

FCC Test Report

FCC ID: 2AKWZ-F840

Product: 3G/4G fixed wireless phone
Trade Mark: Cocomm
Model Number: F840
Family Model: N/A
Report No.: S19022104801001

Prepared for

CO-COMM SERVICIOS TELECOMUNICACIONES S.L.
Lisboa 20, Las Rozas P.O. Box 28232, Madrid, Spain

Prepared by

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TEST RESULT CERTIFICATION**Applicant's name**: CO-COMM SERVICIOS TELECOMUNICACIONES S.L.

Address: Lisboa 20, Las Rozas P.O. Box 28232, Madrid, Spain

Manufacturer's Name.....: CO-COMM SERVICIOS TELECOMUNICACIONES S.L.

Address: Lisboa 20, Las Rozas P.O. Box 28232, Madrid, Spain

Product description

Product name: 3G/4G fixed wireless phone

Model and/or type reference : F840

FCC Part15B

Standards: ANSI C63.4:2014

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with Part 15 of FCC Rules. And it is applicable only to the tested sample identified in the report.

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Date of Test:

Date (s) of performance of tests: 14 Nov. 2018 ~ 24 Dec. 2018

Date of Issue: 22 Feb. 2019

Test Result.....: **Pass**

Testing Engineer :



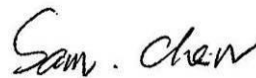
(Eileen Liu)

Technical Manager :



(Jason Chen)

Authorized Signatory :



(Sam Chen)

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1. TEST SUMMARY

Test procedures according to the technical standards:

EMC Emission				
Standard	Test Item	Limit	Judgment	Remark
FCC Part15B ANSI C63.4: 2014	Conducted Emission	Class B	PASS	
	Radiated Emission	Class B	PASS	

NOTE:

- (1) 'N/A' denotes test is not applicable in this Test Report
- (2) For client's request and manual description, the test will not be executed.

1.1 TEST FACILITY

Shenzhen NTEK Testing Technology Co., Ltd

Add. : 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen 518126 P.R. China.

FCC Registration Number:463705; IC Registration Number:9270A-1

CNAS Registration Number:L5516

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately **95 %**.

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U, (dB)	NOTE
NTEKC01	ANSI	150 KHz ~ 30MHz	3.2	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	U, (dB)	NOTE
NTEKA01	ANSI	30MHz ~ 1000MHz	4.7	
		1GHz ~12.4GHz	5.0	

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	3G/4G fixed wireless phone		
Trade Mark	Cocomm		
Model Name	F840		
Family Model	N/A		
Model Difference	N/A		
Product Description	The EUT is a 3G/4G fixed wireless phone.		
	Connecting I/O port:	USB, DC input, MIC	
	Operation Frequency:	2.57GHz	
	Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.		
Power Source	DC 3.7V from Battery or DC 5V from Adapter		
Adapter	Model: S008ACU0500150 Input: 100-240V~50/60Hz 250mA Output: 5V ---1500mA		
Battery	DC 3.7V/4000mAh		
HW Version	2.0		
SW Version	F840vCO130.0.1		

2.1.1 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	USB Data Transmission
Mode 2	TF card Playing
Mode 3	REC
Mode 4	FM

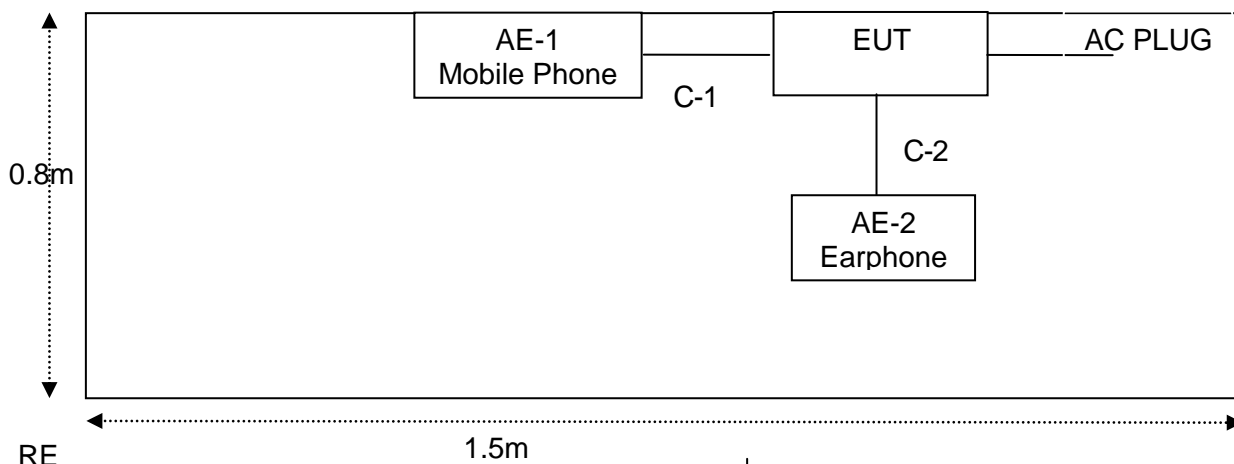
For Conducted Test	
Final Test Mode	Description
Mode 1	USB Data Transmission
Mode 2	TF card Playing
Mode 3	REC
Mode 4	FM

For Radiated Test	
Final Test Mode	Description
Mode 1	USB Data Transmission
Mode 2	TF card Playing
Mode 3	REC
Mode 4	FM

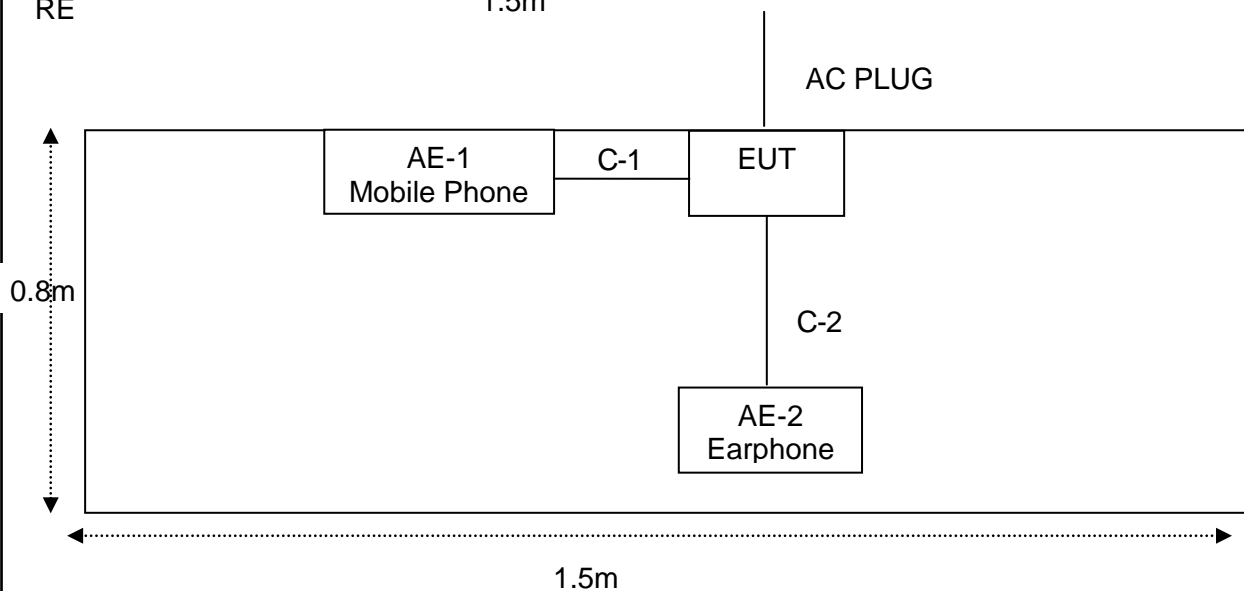
Note: Final Test Mode: Through Pre-scan, find the mode 3 is the worst case.
Only the worst case mode is recorded in the report.

2.2 DESCRIPTION OF TEST SETUP

CE



RE



2.3 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

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.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
AE-1	Mobile phone	Samsung	GALAXY S5	N/A	Peripherals
AE-2	Earphone	N/A	2688	N/A	Peripherals

Item	Cable Type	Shielded Type	Ferrite Core	Length	Note
C-1	USB Cable	NO	NO	1.4m	
C-2	Earphone Cable	NO	NO	1.2m	

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” means “shielded” “with core”; “NO” means “unshielded” “without core”.

2.4 MEASUREMENT INSTRUMENTS LIST

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	MY45108040	2018.05.19	2019.05.18	1 year
2	Test Receiver	R&S	ESPI	101318	2018.05.19	2019.05.18	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2018.04.08	2019.04.07	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2018.05.19	2019.05.18	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	2018.05.19	2019.05.18	1 year
6	Horn Antenna	EM	EM-AH-10180	2011071402	2018.04.08	2019.04.07	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2018.05.19	2019.05.18	1 year
8	Amplifier	EMC	EMC051835SE	980246	2018.08.05	2019.08.04	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2018.05.19	2019.05.18	1 year
10	Power Meter	DARE	RPR3006W	15I00041SNO84	2018.08.05	2019.08.04	1 year
11	Power Sensor	R&S	URV5-Z4	0395.1619.05	2018.05.19	2019.05.18	1 year
12	Test Cable (30MHz-1GHz)	N/A	R-02	N/A	2017.04.21	2020.04.20	3 year
13	High Test Cable(1G-40GHz)	N/A	R-03	N/A	2017.04.21	2020.04.20	3 year
14	High Test Cable(1G-40GHz)	N/A	R-04	N/A	2017.04.21	2020.04.20	3 year

AC Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2018.05.19	2019.05.18	1 year
2	LISN	R&S	ENV216	101313	2018.04.19	2019.04.18	1 year
3	LISN	SCHWARZBECK	NNLK 8129	8129245	2018.05.19	2019.05.18	1 year
4	50Ω Coaxial Switch	ANRITSU CORP	MP59B	6200983704	2018.05.19	2019.05.18	1 year
5	Test Cable (9KHz-30MHz)	N/A	C01	N/A	2017.04.21	2020.04.20	3 year
6	Test Cable (9KHz-30MHz)	N/A	C02	N/A	2017.04.21	2020.04.20	3 year
7	Test Cable (9KHz-30MHz)	N/A	C03	N/A	2017.04.21	2020.04.20	3 year

Note: Each piece of equipment is scheduled for calibration once a year except the Test Cable which is scheduled for calibration every 3 years.

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

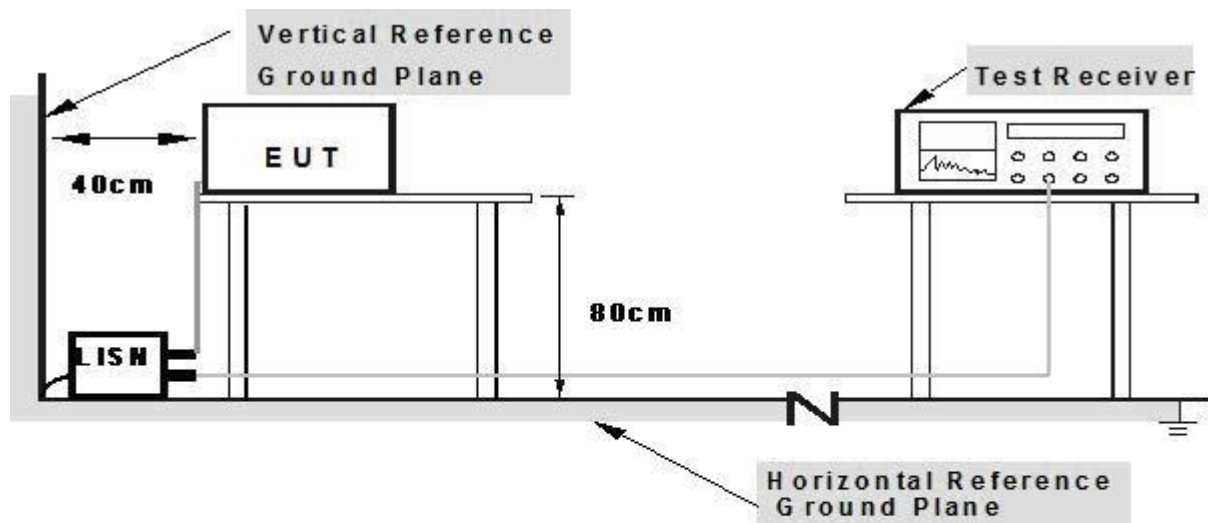
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.2 TEST PROCEDURE

- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 TEST SETUP



Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

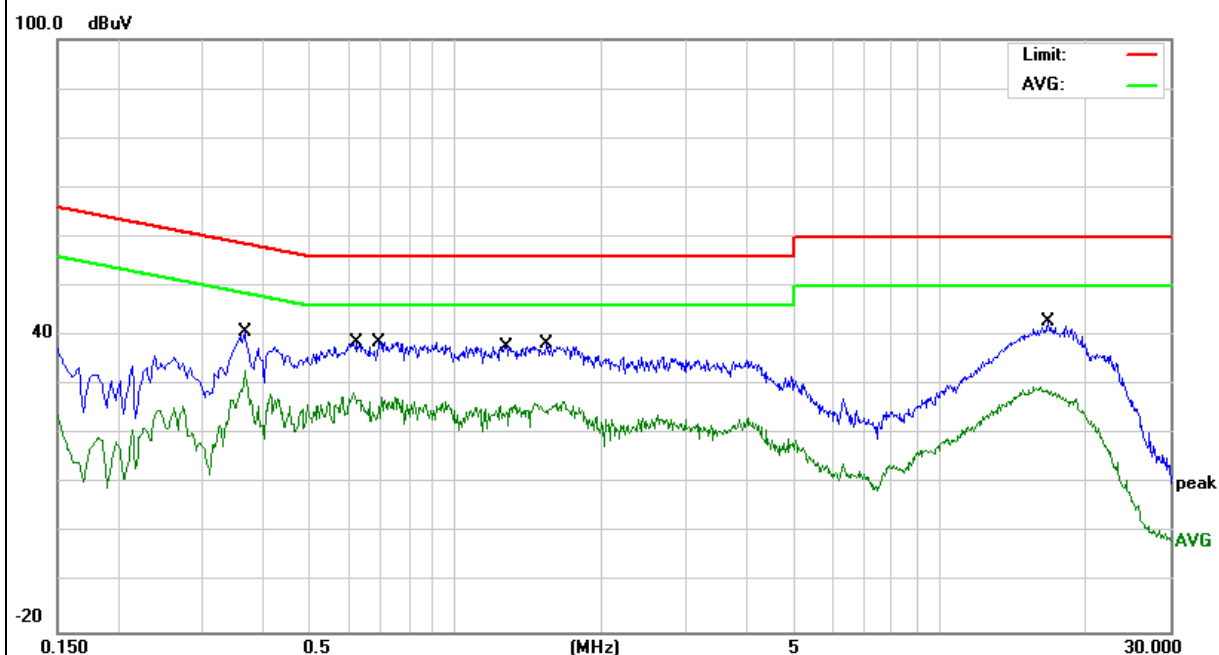
3.1.5 TEST RESULTS

EUT:	3G/4G fixed wireless phone	Model Name. :	F840
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	1010hPa	Test Date:	2018-11-21
Test Mode:	Mode 1	Phase :	L
Test Voltage:	DC 5V from Adapter AC120V/60Hz		

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.3659	31.00	9.74	40.74	58.59	-17.85	QP
0.3659	23.32	9.74	33.06	48.59	-15.53	AVG
0.6260	28.88	9.74	38.62	56.00	-17.38	QP
0.6260	18.75	9.74	28.49	46.00	-17.51	AVG
0.6939	28.95	9.74	38.69	56.00	-17.31	QP
0.6939	17.79	9.74	27.53	46.00	-18.47	AVG
1.2740	28.10	9.74	37.84	56.00	-18.16	QP
1.2740	16.04	9.74	25.78	46.00	-20.22	AVG
1.5420	28.49	9.77	38.26	56.00	-17.74	QP
1.5420	16.96	9.77	26.73	46.00	-19.27	AVG
16.8298	32.61	10.15	42.76	60.00	-17.24	QP
16.8298	19.59	10.15	29.74	50.00	-20.26	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

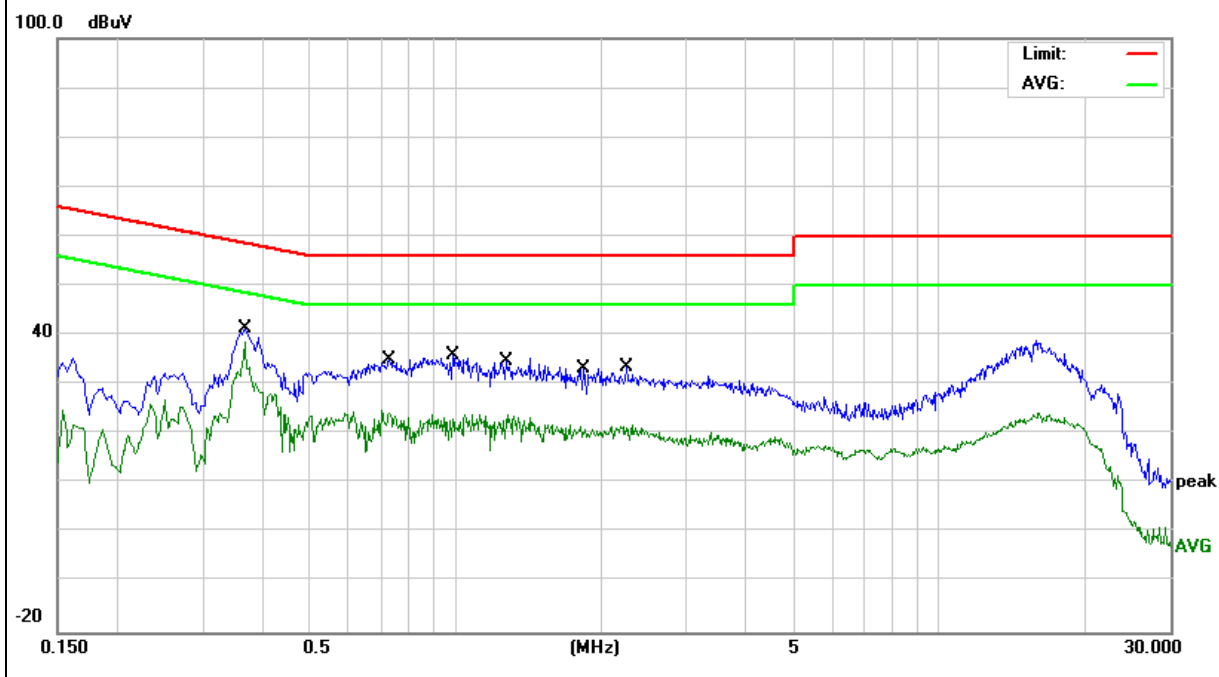


EUT:	3G/4G fixed wireless phone	Model Name. :	F840
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	1010hPa	Test Date:	2018-11-21
Test Mode:	Mode 1	Phase :	N
Test Voltage:	DC 5V from Adapter AC120V/60Hz		

Frequency (MHz)	Reading Level (dBμV)	Correct Factor (dB)	Measure-ment (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.3659	31.65	9.75	41.40	58.59	-17.19	QP
0.3659	28.98	9.75	38.73	48.59	-9.86	AVG
0.7299	25.28	9.75	35.03	56.00	-20.97	QP
0.7299	14.97	9.75	24.72	46.00	-21.28	AVG
0.9859	26.11	9.75	35.86	56.00	-20.14	QP
0.9859	14.32	9.75	24.07	46.00	-21.93	AVG
1.2700	24.91	9.75	34.66	56.00	-21.34	QP
1.2700	14.09	9.75	23.84	46.00	-22.16	AVG
1.8460	23.44	9.79	33.23	56.00	-22.77	QP
1.8460	11.82	9.79	21.61	46.00	-24.39	AVG
2.2500	23.66	9.80	33.46	56.00	-22.54	QP
2.2500	11.94	9.80	21.74	46.00	-24.26	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



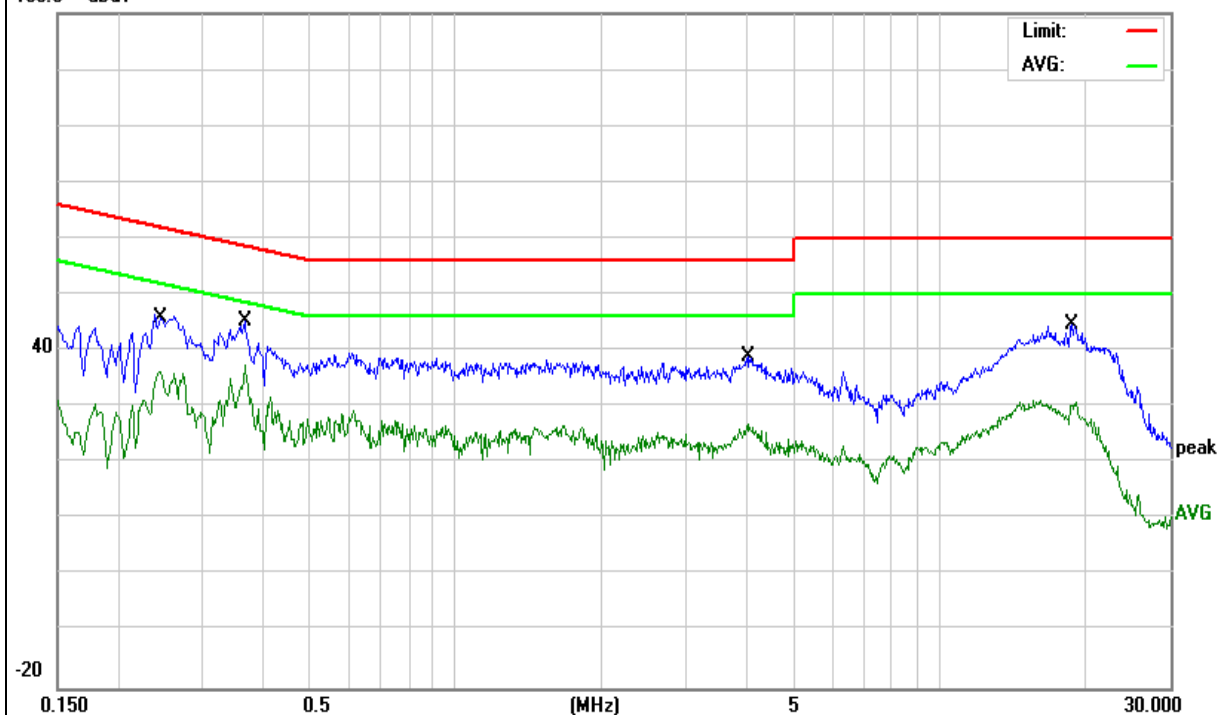
EUT:	3G/4G fixed wireless phone	Model Name. :	F840
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	1010hPa	Test Date:	2018-11-21
Test Mode:	Mode 1	Phase :	L
Test Voltage:	DC 5V from Adapter AC240V/60Hz		

Frequency (MHz)	Reading Level (dBμV)	Correct Factor (dB)	Measure-ment (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.2429	36.57	9.76	46.33	61.99	-15.66	QP
0.2429	26.57	9.76	36.33	51.99	-15.66	AVG
0.3659	35.50	9.74	45.24	58.59	-13.35	QP
0.3659	27.82	9.74	37.56	48.59	-11.03	AVG
4.0377	28.97	9.85	38.82	56.00	-17.18	QP
4.0377	17.13	9.85	26.98	46.00	-19.02	AVG
18.7577	34.56	10.20	44.76	60.00	-15.24	QP
18.7577	20.61	10.20	30.81	50.00	-19.19	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

100.0 dBμV

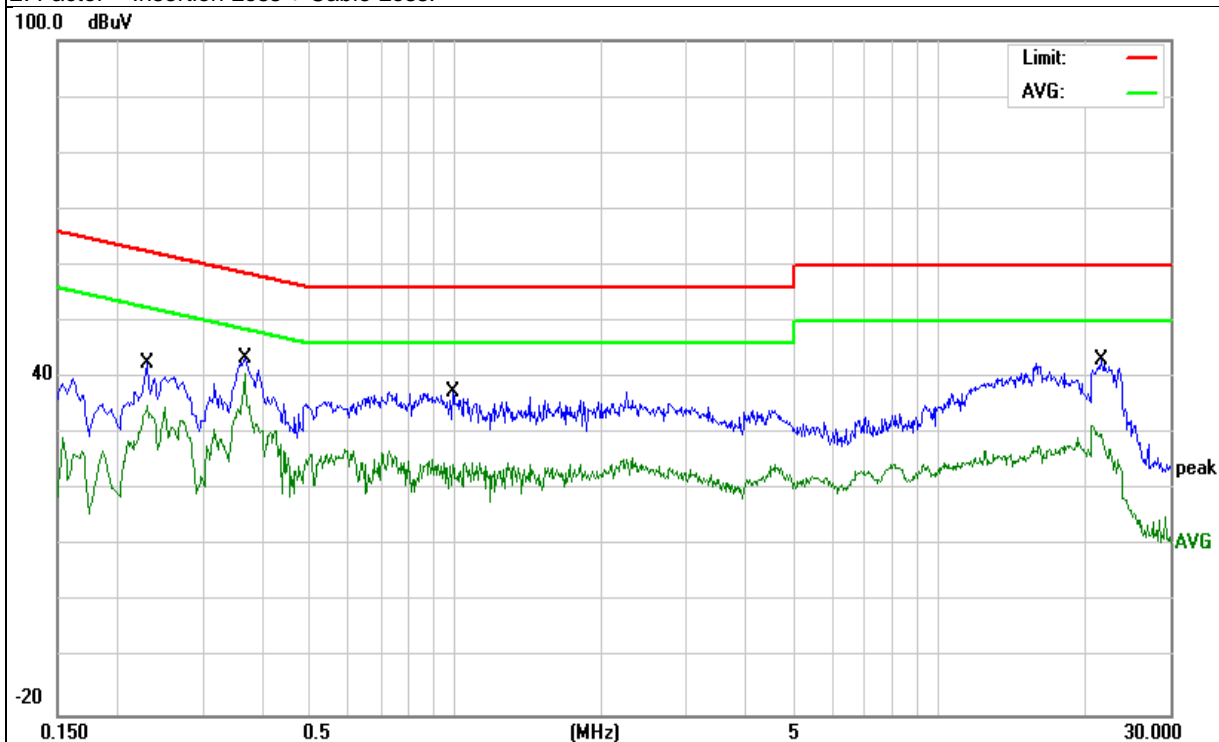


EUT:	3G/4G fixed wireless phone	Model Name. :	F840
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	1010hPa	Test Date:	2018-11-21
Test Mode:	Mode 1	Phase :	N
Test Voltage:	DC 5V from Adapter AC240V/60Hz		

Frequency (MHz)	Reading Level (dBμV)	Correct Factor (dB)	Measure-ment (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.2303	32.84	9.74	42.58	62.44	-19.86	QP
0.2303	25.29	9.74	35.03	52.44	-17.41	AVG
0.3659	33.65	9.75	43.40	58.59	-15.19	QP
0.3659	30.98	9.75	40.73	48.59	-7.86	AVG
0.9858	27.61	9.75	37.36	56.00	-18.64	QP
0.9858	15.82	9.75	25.57	46.00	-20.43	AVG
21.6060	32.68	10.36	43.04	60.00	-16.96	QP
21.6060	21.08	10.36	31.44	50.00	-18.56	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 3m)
	dBuV/m	dBuV/m
30 ~ 88	39.0	40.0
88 ~ 216	43.5	43.5
216 ~ 960	46.5	46.0
Above 960	49.5	54.0

Notes:

- (1) The limit for radiated test was performed according to as following:
FCC PART 15B /ICES-003.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

3.2.2 TEST PROCEDURE

Test Arrangement for Radiated Emissions up to 1 GHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited test facility. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

Note: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for quasi-peak detection (QP) at frequency below 1GHz.

Test Arrangement for Radiated Emissions above 1 GHz.

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna can be varied from one meter to four meters, the height of adjustment depends on the EUT height and the antenna 3dB beamwidth both, to detect the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

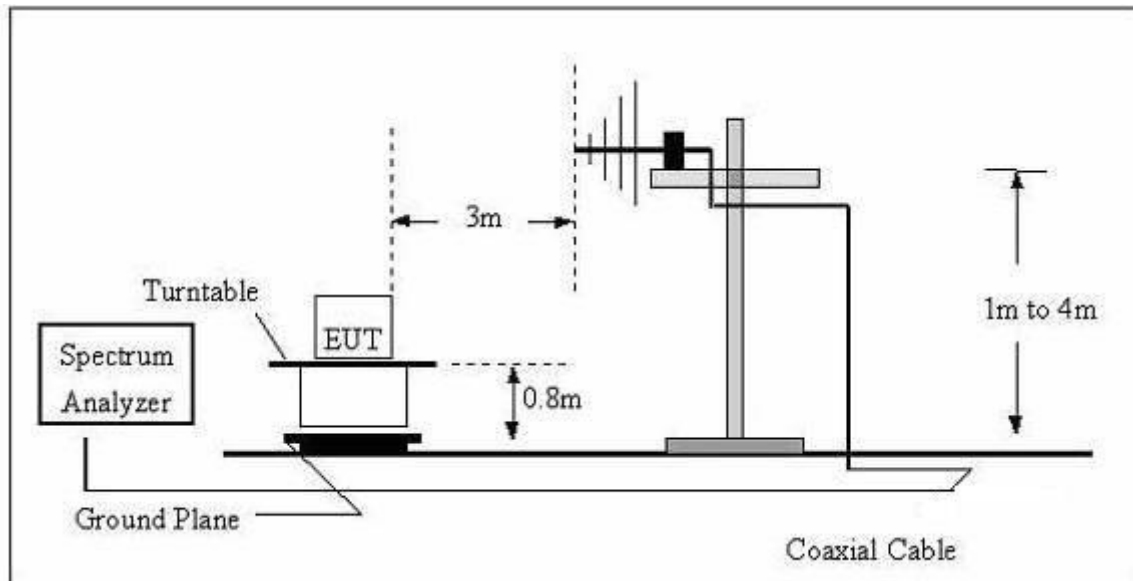
Note: For the hand-held device, the EUT should be measured for all 3 axes and only the worst case is recorded in the report

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

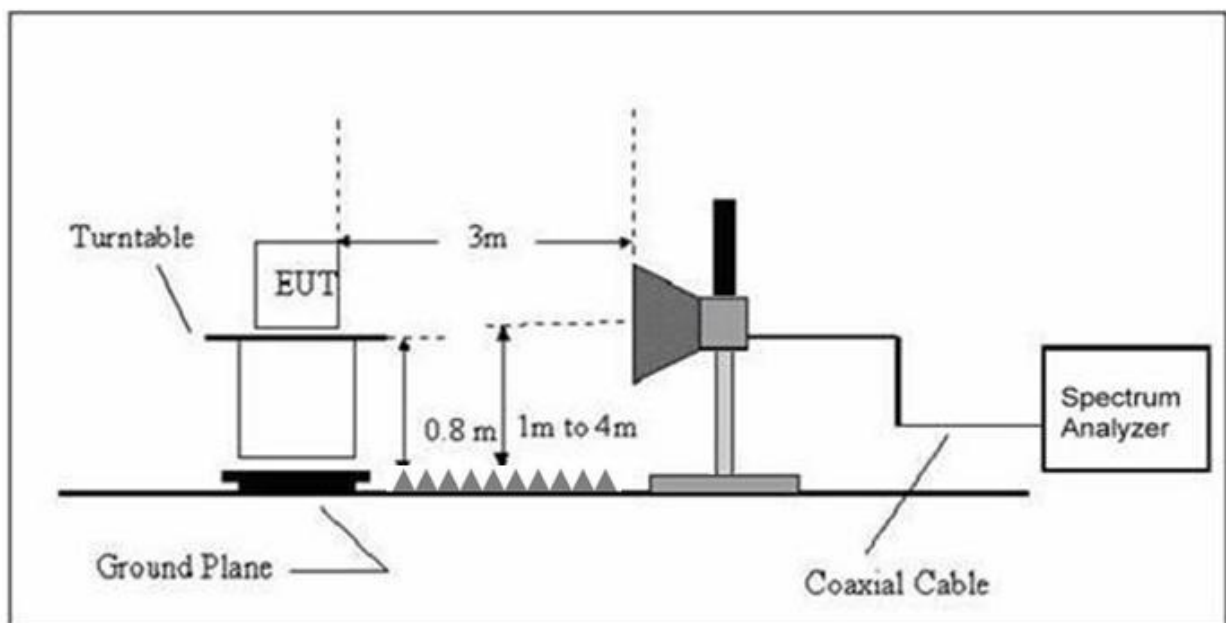
Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	1 MHz
	Avg	1 MHz	10 Hz

3.2.3 TEST SETUP

For Radiated Emission 30~1000MHz



(B) Radiated Emission Test Set-Up Frequency Above 1GHz



3.2.4 TEST RESULTS

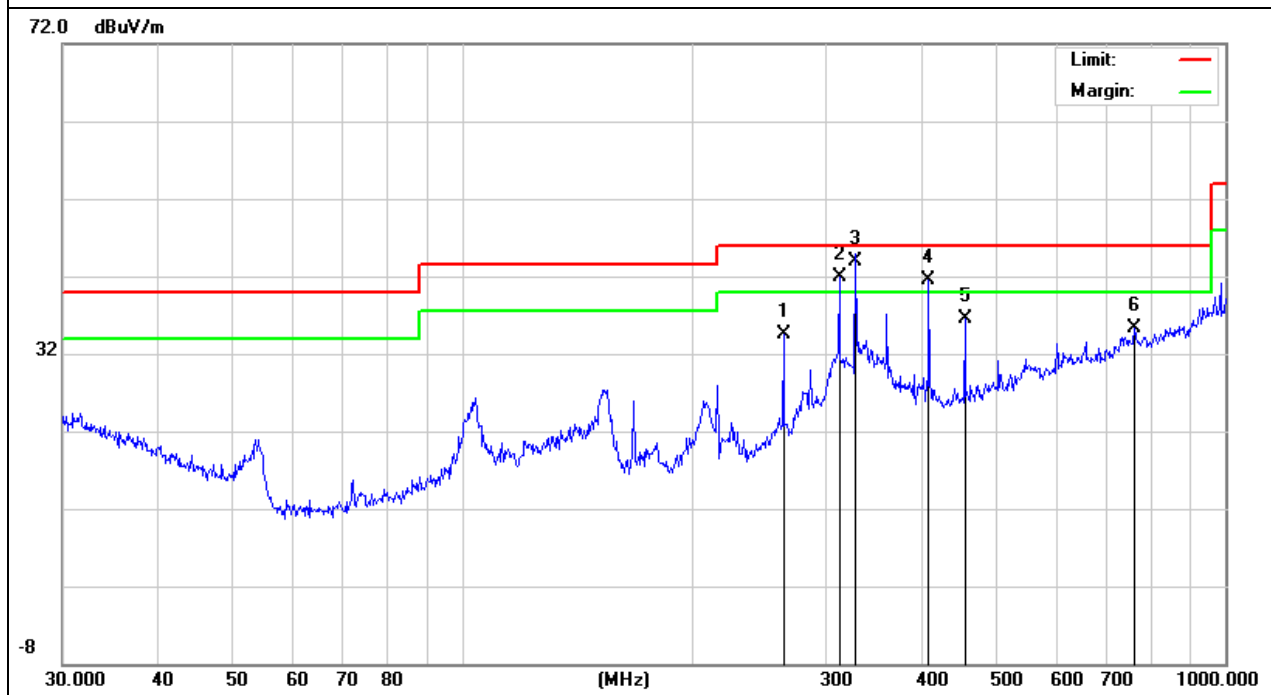
TEST RESULTS (30~1000 MHz)

EUT:	3G/4G fixed wireless phone	Model Name:	F840
Temperature:	24 °C	Relative Humidity:	54%
Pressure:	1010 hPa	Test Date :	2018-11-21
Test Mode :	Mode 1	Polarization :	Horizontal
Test Power :	DC 5V from Adapter AC120V/60Hz		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	263.8190	18.91	15.64	34.55	46.00	-11.45	QP
H	312.1792	25.49	16.38	41.87	46.00	-4.13	QP
H	327.8873	27.28	16.72	44.00	46.00	-2.00	QP
H	408.9460	21.59	19.95	41.54	46.00	-4.46	QP
H	455.9057	15.90	20.60	36.50	46.00	-9.50	QP
H	760.7036	7.65	27.59	35.24	46.00	-10.76	QP

Remark:

Factor = Antenna Factor + Cable Loss - Amplifier.

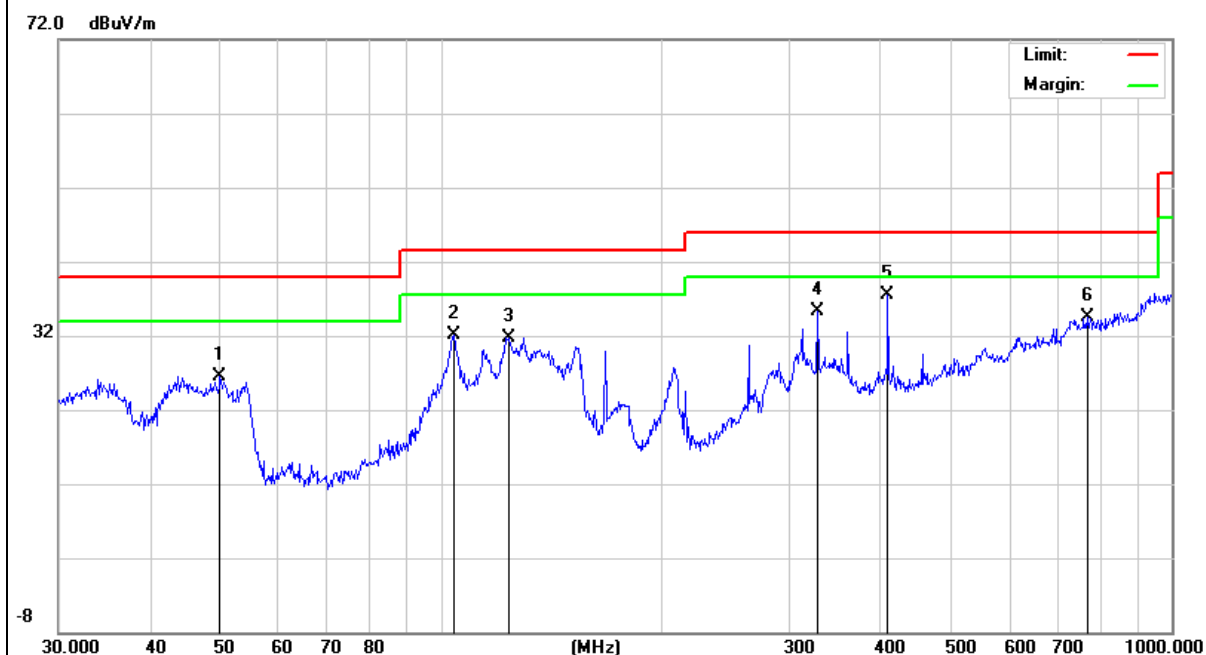


EUT:	3G/4G fixed wireless phone	Model Name :	F840
Temperature:	24 °C	Relative Humidity:	54%
Pressure:	1010 hPa	Test Date :	2018-11-21
Test Mode :	Mode 1	Polarization :	Vertical
Test Power :	DC 5V from Adapter AC120V/60Hz		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	49.8813	17.17	9.34	26.51	40.00	-13.49	QP
V	104.1701	19.93	12.08	32.01	43.50	-11.49	QP
V	123.6984	18.49	13.28	31.77	43.50	-11.73	QP
V	327.8873	18.58	16.72	35.30	46.00	-10.70	QP
V	408.9460	17.60	19.95	37.55	46.00	-8.45	QP
V	766.0570	7.02	27.50	34.52	46.00	-11.48	QP

Remark:

Factor = Antenna Factor + Cable Loss - Amplifier.



3.2.5 TEST RESULTS(1000~26500MHz)

EUT:	3G/4G fixed wireless phone	Model Name :	F840
Temperature:	24 °C	Relative Humidity:	54%
Pressure:	1010 hPa	Test Date :	2018-11-21
Test Mode :	Mode 1		
Test Power :	DC 5V from Adapter AC120V/60Hz		

All the modulation modes have been tested, and the worst result was report as below:

Pol ar (H/ V)	Frequenc y (MHz)	Readi ng (dBuV /m)	Corre ct dB	Result (dBuV/m)	Limit For Peak (dBuV/ m)	Limit For AVG (dBuV/ m)	Margin for AVG Limit (dB)	Detec tor
V	5802.50	34.81	7.25	42.06	74.00	54.00	-11.94	peak
V	9712.50	33.01	14.50	47.51	74.00	54.00	-6.49	peak
V	10605.00	32.08	16.83	48.91	74.00	54.00	-5.09	peak
V	12347.50	31.01	17.89	48.90	74.00	54.00	-5.10	peak
V	15237.50	28.08	20.63	48.71	74.00	54.00	-5.29	peak
V	17277.50	19.66	29.01	48.67	74.00	54.00	-5.33	peak
H	2955.00	42.29	-2.43	39.86	74.00	54.00	-14.14	peak
H	5547.50	35.93	7.35	43.28	74.00	54.00	-10.72	peak
H	8352.50	34.60	12.86	47.46	74.00	54.00	-6.54	peak
H	12517.50	30.99	18.43	49.42	74.00	54.00	-4.58	peak
H	14387.50	27.85	21.93	49.78	74.00	54.00	-4.22	peak
H	17150.00	21.04	28.64	49.68	74.00	54.00	-4.32	peak

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit

Note: Only the worst results data points are reported in the report. PK value is lower than the Average value limit, So average didn't record.