

# **FCC EMC Test Report**



Subject to

Supplier's Declaration of Conformity

Procedure

**Product:** Wireless Digital Terminal

Trade Mark : Neusoft

Model Number: S611

#### **Prepared for**

**Neusoft Corporation** 

No.2 Xinxiu Street, Hunnan New District, Shenyang City, Liaoning Province, China

#### Prepared by

Shenzhen NTEK Testing Technology Co., Ltd.

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

Tel.: +86-755-6115 6588 Fax.: +86-755-6115 6599

Website: http://www.ntek.org.cn

Version 2.0 Page 1 of 21

## **TEST RESULT CERTIFICATION**

Applicant's Name:	Neusoft (	Corporation			
Address:	No.2 Xinxiu Street, Hunnan New District, Shenyang City, Liaoning Province, China				
Manufacturer's Name:	Neusoft (	Corporation			
Address:	No.2 Xinxiu Street, Hunnan New District, Shenyang City, Liaoning Province, China				
Product description					
Product name:	Wireless	Digital Terminal			
Model and/or type reference :	S611				
Standards:	47 CFR F ANSI C63	FCC part15 subpart B, 3.4:2014			
equipment under test (EUT) is in the tested sample identified in the This report shall not be reproduce	n complian ne report. ced excep rised by N	sted by NTEK, and the test results show that the ace with Part 15 of FCC Rules. And it is applicable only to the tin full, without the written approval of NTEK, this TEK, personal only, and shall be noted in the revision of			
Date (s) of performance of tests.		25 Dog 2019, 05 Mar 2010			
Date of Issue					
Test Result		Pass			
rest ivesuit					
Testing Engine	er :	Loren-Luo			
		(Loren Luo)			
Technical Man	ager :	Jason chen			
		(Jason Chen)			
Authorized Sig	natory:	Sam. Chen			
		(Sam Chen)			

Version 2.0 Page 2 of 21

Table of Contents	Page
1 . TEST SUMMARY	4
1.1 TEST FACILITY	5
1.2 MEASUREMENT UNCERTAINTY	5
2 . GENERAL INFORMATION	7
2.1 GENERAL DESCRIPTION OF EUT	7
2.2 DESCRIPTION OF TEST MODES	8
2.3 DESCRIPTION OF TEST SETUP	9
2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL	10
2.5 MEASUREMENT INSTRUMENTS LIST	11
3 . EMC EMISSION TEST	12
3.1 CONDUCTED EMISSION MEASUREMENT	12
3.1.1 POWER LINE CONDUCTED EMISSION	12
3.1.2 TEST PROCEDURE	13
3.1.3 TEST SETUP	13
3.1.4 EUT OPERATING CONDITIONS 3.1.5 TEST RESULTS	13 14
3.2 RADIATED EMISSION MEASUREMENT	16
3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT	16
3.2.2 TEST PROCEDURE	16
3.2.3 TEST SETUP	17
3.2.4 EUT OPERATING CONDITIONS	17
3.2.5 TEST RESULTS(30-1000MHz)	18
3.2.6 TEST RESULTS(1000MHz-18000MHz)	20

Version 2.0 Page 3 of 21

## 1. TEST SUMMARY

Test procedures according to the technical standards:

EMC Emission				
Standard	Test Item	Limit	Judgment	Remark
FCC part15 subpart B,	Conducted Emission	Class B	PASS	
ANSI C63.4: 2014	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.

Version 2.0 Page 4 of 21

#### 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

CNAS-Lab. : The Laboratory has been assessed and proved to be in compliance

with CNAS-CL01:2006 (identical to ISO/IEC 17025:2005)

The Certificate Registration Number is L5516

IC-Registration : The Certificate Registration Number is 9270A-1

FCC- Accredited : Test Firm Registration Number: 463705

Designation Number: CN1184

A2LA-Lab. : The Certificate Registration Number is 4298.01

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for

the competence of testing and calibration laboratories.

This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).

#### 1.2 MEASUREMENT UNCERTAINTY

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

Test Item	Measurement Frequency Range	K	U(dB)
AC Mains Conducted Emission	0.009kHz ~ 0.15MHz	2	2.66
AC Mains Conducted Emission	0.15MHz ~ 30MHz	2	2.80
Telecom Conducted Emission (Cat 3)	0.15MHz ~ 30MHz	2	2.40
Telecom Conducted Emission (Cat 5)	0.15MHz ~ 30MHz	2	2.58
Radiated Emission	30MHz ~ 1000MHz	2	2.64
Radiated Emission	1000MHz ~ 6000MHz	2	2.40
Radiated Emission	6000MHz ~ 18000MHz	2	2.52
Power Clamp	30MHz ~ 300MHz	2	2.20

Version 2.0 Page 5 of 21

## **Revision History**

Report No.	Version	Description	Issued Date
S18122500505001	Rev.01	Initial issue of report	Apr. 24, 2019

Version 2.0 Page 6 of 21



## 2. GENERAL INFORMATION

## 2.1 GENERAL DESCRIPTION OF EUT

Equipment	Wireless Digital Terminal			
Model Name	S611			
Additional Model Number(s)	N/A			
Model Difference	N/A			
	The EUT is a Wireless Dig	gital Terminal.		
Product Description	Operating frequency:	1.8 GHz (Declaration by		
		Manufacturer)		
	Connecting I/O port:	N/A		
	Based on the application, features, or specification exhibited in User's Manual. More details of EUT technical specification, please refer to the User's Manual.			
Power Source	DC Voltage			
Power Rating	DC 5V or DC 3.85V, 4600mAh Powered by Battery Adapter Model: ICP12-050-2000B Adapter Rating: Input: AC 100-240V, 50/60Hz, 0.5A Output: DC 5V, 2000mA			

Version 2.0 Page 7 of 21



#### 2.2 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.

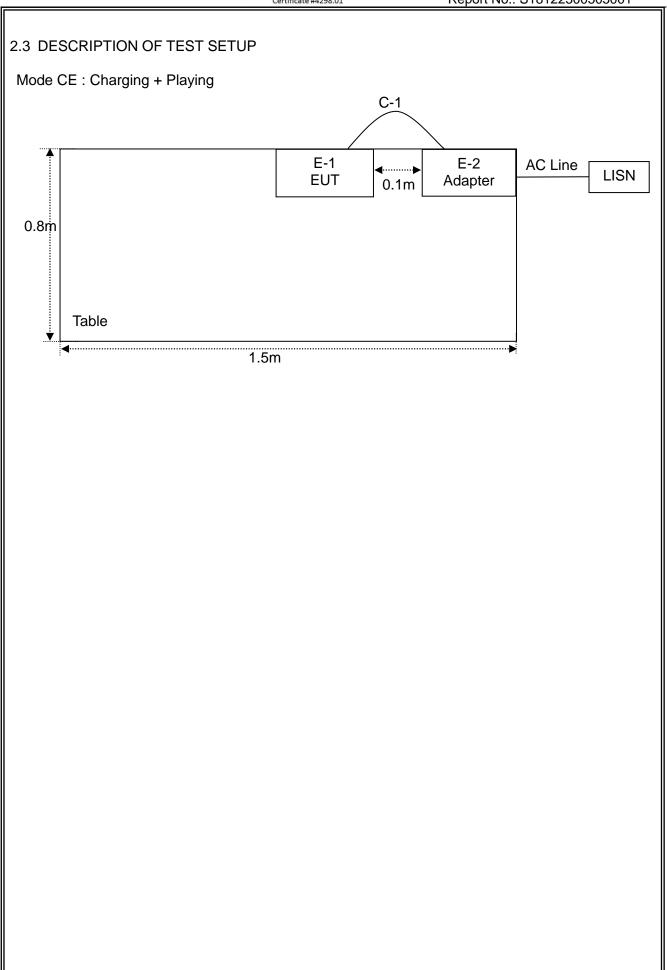
All test modes in the table below are tested, the worst case is Mode 1, just reported the worst mode data.

Pretest Mode	Description
Mode 1	Charging + Playing
Mode 2	Charging + Scanning
Mode 3	Charging + REC
Mode 4	Data Transmission

For Conducted Test			
Final Test Mode	Description		
Mode 1	Charging + Playing		
Mode 2	Charging + Scanning		
Mode 3	Charging + REC		
Mode 4	Data Transmission		

For Radiated Test			
Final Test Mode	Description		
Mode 1	Charging + Playing		
Mode 2	Charging + Scanning		
Mode 3	Charging + REC		
Mode 4	Data Transmission		

Version 2.0 Page 8 of 21



Version 2.0 Page 9 of 21

#### 2.4 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
E-1	Wireless Digital Terminal	Neusoft	S611	N/A	EUT
E-2	Adapter	N/A	ICP12-050-2000B	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	1.0m	

#### 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  ${\tt \Gamma}$  Length  ${\tt \square}$  column.
- (3) "YES" means "shielded" "with core"; "NO" means "unshielded" "without core".

Version 2.0 Page 10 of 21

## 2.5 MEASUREMENT INSTRUMENTS LIST

## 2.5.1 CONDUCTED TEST SITE

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Low frequency cable	N/A	C-01	N/A	Jun. 06, 2017	Jun. 05, 2020	3 years
2	50Ω Switch	Anritsu	MP59B	6200983704	May 19, 2018	May 18, 2020	2 years
3	LISN	SCHWARZB ECK	NNLK 8129	8129245	May 19, 2018	May 18, 2019	1 year
4	EMI Test Receiver	R&S	ESCI	101160	May 19, 2018	May 18, 2019	1 year
5	LISN	R&S	ENV216	101313	Apr. 09, 2018	Apr. 08, 2019	1 year
6	LISN	R&S	ENV216	101490	Oct. 08, 2018	Oct. 07, 2019	1 year

## 2.5.2 RADIATED TEST SITE

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Antenna Mast	SKET	N/A	N/A	N/A	N/A	N/A
2	Antenna Mast	EM	SC100	N/A	Apr. 26, 2017	Apr. 25, 2020	3 years
3	50Ω Switch	Anritsu	MP59B	6200983705	May 19, 2018	May 18, 2020	2 years
4	Test Cable	N/A	R-01	N/A	Aug. 08, 2016	Aug. 07, 2019	3 years
5	Pre-Amplifier	EMC	EMC051835S E	980246	Aug. 05, 2018	Aug. 04, 2019	1 year
6	Test Cable	N/A	R-03	N/A	Jun. 26, 2016	Jun. 25, 2019	3 years
7	EMI Test Receiver	R&S	ESCI	101160	May 19, 2018	May 18, 2019	1 year
8	Bilog Antenna	TESEQ	CBL6111D	31216	Apr. 08, 2018	Apr. 07, 2019	1 year
9	Broadband Horn Antenna	EM	EM-AH-10180	2011071402	Apr. 08, 2018	Apr. 07, 2019	1 year
10	Spectrum Analyzer	Agilent	E4440A	MY41000130	Mar. 28, 2018	Mar. 28, 2019	1 year

Version 2.0 Page 11 of 21



## 3. EMC EMISSION TEST

## 3.1 CONDUCTED EMISSION MEASUREMENT

## 3.1.1 POWER LINE CONDUCTED EMISSION

(Frequency Range 150kHz-30MHz)

FREQUENCY (MHz)	☐Class /	A (dBµV)	⊠Class B (dBμV)		
FREQUENCT (MITZ)	Quasi-peak	Average	Quas -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

The fellowing 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		

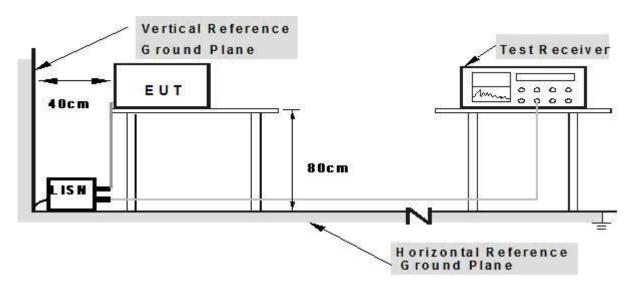
Version 2.0 Page 12 of 21



#### 3.1.2 TEST PROCEDURE

- a. 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.
- b. 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.
- c. 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.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item -EUT Test Photos.

#### 3.1.3 TEST SETUP



Hote: 1.Support units were connected to second LISM.
2.Both of LISMs (AMM) are 80 cm from EUT and at least 80 from other units and other metal planes

## 3.1.4 EUT OPERATING CONDITIONS

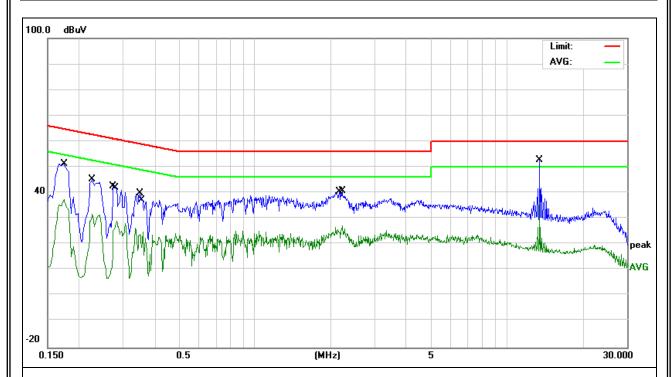
The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

Version 2.0 Page 13 of 21



## 3.1.5 TEST RESULTS

EUT:	Wireless Digital Terminal	Model Name.:	S611
Temperature:	19℃	Relative Humidity:	49%
Pressure:	1010hPa	Test Date :	2019-01-05
Test Mode:	Charging + Playing	Phase:	L
Test Voltage:	AC 120V/60Hz		



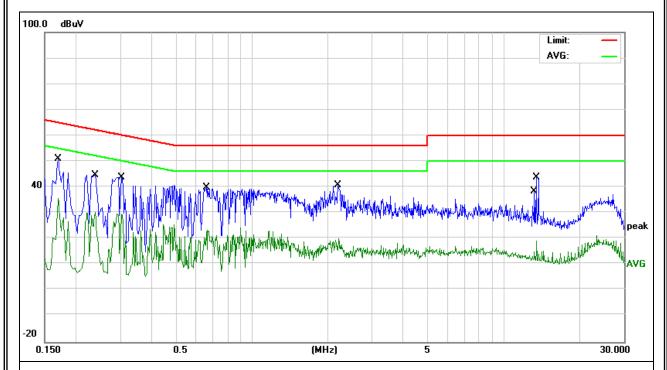
No. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1737	41.58	9.76	51.34	64.78	-13.44	QP	
2	0.1737	27.77	9.76	37.53	54.78	-17.25	AVG	
3	0.2260	35.39	9.76	45.15	62.59	-17.44	QP	
4	0.2260	21.86	9.76	31.62	52.59	-20.97	AVG	
5	0.2740	32.71	9.75	42.46	60.99	-18.53	QP	
6	0.2818	19.21	9.75	28.96	50.76	-21.80	AVG	
7	0.3498	30.12	9.73	39.85	58.97	-19.12	QP	
8	0.3578	15.18	9.74	24.92	48.78	-23.86	AVG	
9	2.1659	30.67	9.78	40.45	56.00	-15.55	QP	
10	2.2139	17.47	9.78	27.25	46.00	-18.75	AVG	
11 *	13.5017	40.56	10.07	50.63	60.00	-9.37	QP	
12	13.5017	26.31	10.07	36.38	50.00	-13.62	AVG	

#### Remark:

Correct Factor = Insertion Loss + Cable Loss Measurement Level = Reading Level + Correct Factor Over Level = Measurement Level - Limit

Version 2.0 Page 14 of 21

<u> </u>			
EUT:	Wireless Digital Terminal	Model Name.:	S611
Temperature:	19℃	Relative Humidity:	49%
Pressure:	1010hPa	Test Date :	2019-01-05
Test Mode:	Charging + Playing	Phase:	N
Test Voltage:	AC 120V/60Hz		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1700	41.13	9.73	50.86	64.96	-14.10	QP	
2		0.1700	25.89	9.73	35.62	54.96	-19.34	AVG	
3		0.2379	34.97	9.74	44.71	62.17	-17.46	QP	
4		0.2379	20.61	9.74	30.35	52.17	-21.82	AVG	
5		0.3019	34.14	9.74	43.88	60.19	-16.31	QP	
6		0.3059	19.61	9.74	29.35	50.08	-20.73	AVG	
7		0.6580	30.03	9.75	39.78	56.00	-16.22	QP	
8		0.6660	13.66	9.75	23.41	46.00	-22.59	AVG	
9		2.1939	31.01	9.80	40.81	56.00	-15.19	QP	
10		2.2019	10.33	9.80	20.13	46.00	-25.87	AVG	
11		13.2499	4.75	10.07	14.82	50.00	-35.18	AVG	
12		13.4699	33.61	10.07	43.68	60.00	-16.32	QP	

#### Remark:

Correct Factor = Insertion Loss + Cable Loss Measurement Level = Reading Level + Correct Factor Over Level = Measurement Level - Limit

Version 2.0 Page 15 of 21



#### 3.2 RADIATED EMISSION MEASUREMENT

#### 3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

	☐Class A (at 3m)	⊠Class B (at 3m)		
FREQUENCY (MHz)	dBµV/m	dBμV/m		
30 ~ 88	49.5	40.0		
88 ~ 216	53.9	43.5		
216 ~ 960	56.9	46.0		
Above 960	60.0	54.0		

#### Notes:

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

#### 3.2.2 TEST PROCEDURE

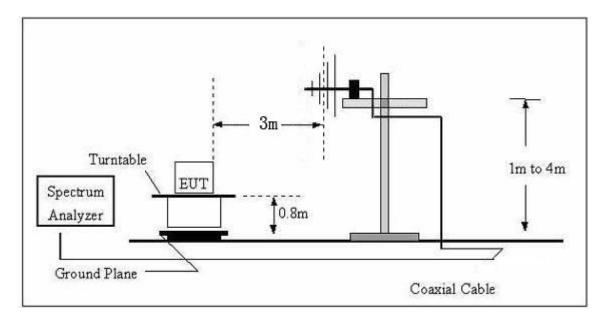
- a. The measuring distance of at 3m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked And then Quasi Peak detector mode re-measured, above 1G Average detector mode will be instead.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP(AV) Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Version 2.0 Page 16 of 21

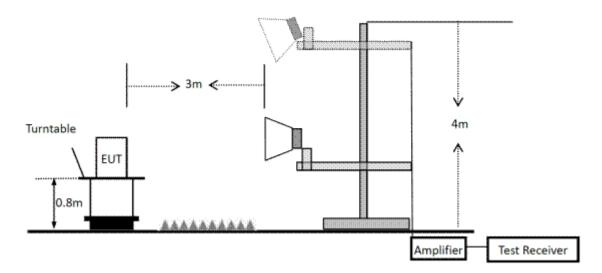


#### 3.2.3 TEST SETUP

## (A) Radiated Emission Test Set-Up Frequency Below 1 GHz



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



#### 3.2.4 EUT OPERATING CONDITIONS

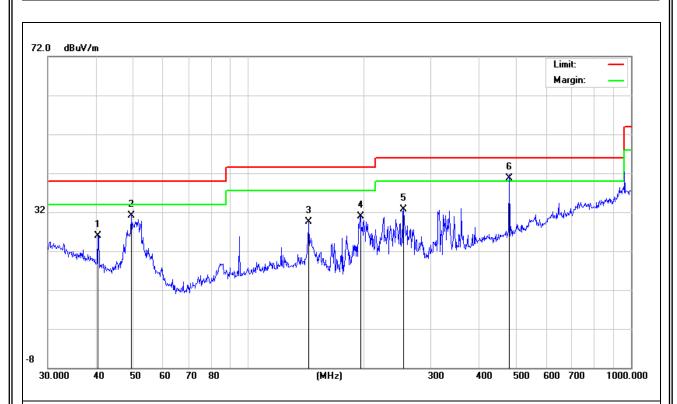
The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

Version 2.0 Page 17 of 21



## 3.2.5 TEST RESULTS(30-1000MHz)

EUT:	Wireless Digital Terminal	Model Name :	S611
Temperature:	20℃	Relative Humidity:	45%
Pressure:	1010hPa	Test Date :	2019-01-04
Test Mode:	Charging + Playing	Polarization:	Horizontal
Test Power:	AC 120V/60Hz		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	d₿	dBuV/m	dBuV/m	d₿	Detector	cm	degree	Comment
1		40.5591	11.91	14.07	25.98	40.00	-14.02	QP	105	152.0	0
2		49.5328	21.49	9.71	31.20	40.00	-8.80	QP	123	154.0	0
3		143.8295	16.27	13.18	29.45	43.50	-14.05	QP	185	132.0	0
4		196.5098	21.08	9.81	30.89	43.50	-12.61	QP	315	213.00	
5		254.7284	17.38	15.23	32.61	46.00	-13.39	QP	225	189.00	
6	* .	480.5276	19.36	21.41	40.77	46.00	-5.23	QP	245	153.00	)

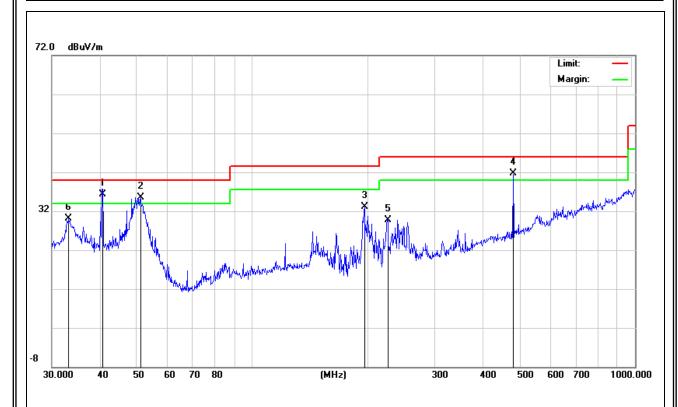
#### Remark:

Correct Factor = Antenna Factor + Cable Loss – Pre-Amplifier gain Measurement Level = Reading Level + Correct Factor Over Level = Measurement Level - Limit

Version 2.0 Page 18 of 21



EUT:	Wireless Digital Terminal	Model Name :	S611
Temperature:	20℃	Relative Humidity:	45%
Pressure:	1010hPa	Test Date :	2019-01-04
Test Mode:	Charging + Playing	Polarization:	Vertical
Test Power:	AC 120V/60Hz		



No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dΒ	dBuV/m	dBuV/m	dΒ	Detector	cm	degree	Comment
1	*	40.7016	22.43	13.97	36.40	40.00	-3.60	QP	105	45.00	
2	ļ	51.1209	27.09	8.51	35.60	40.00	-4.40	QP	123	125.00	
3		196.5098	23.34	9.81	33.15	43.50	-10.35	QP	125	165.00	
4	İ	480.5276	20.32	21.41	41.73	46.00	-4.27	QP	115	58.00	
5		226.0994	17.78	12.02	29.80	46.00	-16.20	QP	125	210.00	
6		33.2111	12.48	17.54	30.02	40.00	-9.98	QP	135	152.00	

#### Remark:

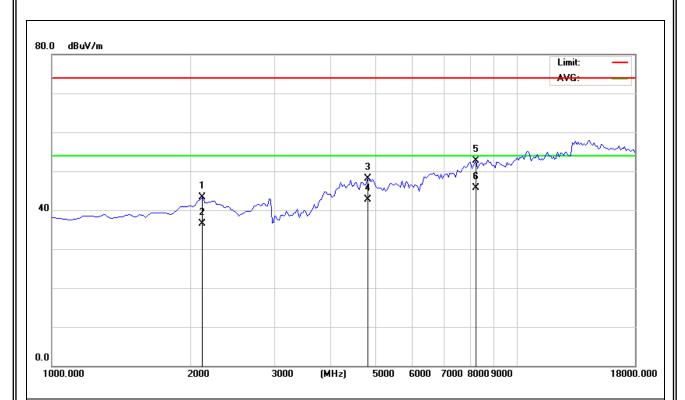
Correct Factor = Antenna Factor + Cable Loss – Pre-Amplifier gain Measurement Level = Reading Level + Correct Factor Over Level = Measurement Level - Limit

Version 2.0 Page 19 of 21



## 3.2.6 TEST RESULTS(1000MHz-18000MHz)

EUT:	Wireless Digital Terminal	Model Name :	S611
Temperature:	20℃	Relative Humidity:	45%
Pressure:	1010hPa	Test Date :	2019-01-04
Test Mode:	Charging + Playing	Polarization:	Horizontal
Test Power:	AC 120V/60Hz		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dΒ	dBuV/m	dBuV/m	dΒ	Detector	cm	degree	Comment
1	2	2105.000	40.98	2.34	43.32	74.00	-30.68	peak	205	125.00	
2	2	2105.000	34.26	2.34	36.60	54.00	-17.40	AVG	223	105.00	
3	4	1825.000	35.41	12.61	48.02	74.00	-25.98	peak	125	136.00	
4	4	1825.000	30.13	12.61	42.74	54.00	-11.26	AVG	175	89.00	
5	8	3225.000	-0.68	53.37	52.69	74.00	-21.31	peak	135	235.00	
6	* 8	3225.000	-7.61	53.37	45.76	54.00	-8.24	AVG	126	202.00	

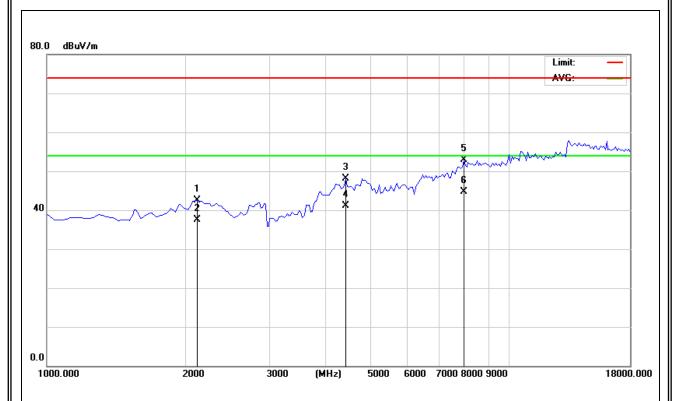
#### Remark:

Correct Factor = Antenna Factor + Cable Loss – Pre-Amplifier gain Measurement Level = Reading Level + Correct Factor Over Level = Measurement Level - Limit

Version 2.0 Page 20 of 21



EUT:	Wireless Digital Terminal	Model Name :	S611
Temperature:	20℃	Relative Humidity:	45%
Pressure:	1010hPa	Test Date :	2019-01-04
Test Mode:	Charging + Playing	Polarization:	Vertical
Test Power:	AC 120V/60Hz		



No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dΒ	dBuV/m	dBuV/m	dΒ	Detector	cm	degree	Comment
1		2105.000	40.15	2.34	42.49	74.00	-31.51	peak	115	34.00	
2		2105.000	35.11	2.34	37.45	54.00	-16.55	AVG	243	135.00	
3		4400.000	37.31	10.78	48.09	74.00	-25.91	peak	105	134.00	
4		4400.000	30.24	10.78	41.02	54.00	-12.98	AVG	335	193.00	
5		7927.500	0.55	52.43	52.98	74.00	-21.02	peak	145	210.00	
6	*	7927.500	-7.69	52.43	44.74	54.00	-9.26	AVG	225	205.00	

#### Remark:

Correct Factor = Antenna Factor + Cable Loss – Pre-Amplifier gain Measurement Level = Reading Level + Correct Factor Over Level = Measurement Level - Limit

Version 2.0 Page 21 of 21