



EMC TEST REPORT

Applicant	MobiWire SAS
FCC ID	QPN-F2S
Product	2G Feature Phone
Brand	Altice
Model	F2s
Report No.	R2001A0060-E1
Issue Date	March 12, 2020

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC Code CFR47 Part15B (2019)/ ANSI C63.4 (2014)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Wei Liu

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Summary of measurement results

Number	Test Case	Clause in FCC Rules	Conclusion
1	Radiated Emission	15.109, ANSI C63.4-2014	PASS
2	Conducted Emission	15.107, ANSI C63.4-2014	PASS
Test Date: January 22, 2020 ~ March 9, 2020			

F2s (Report No.: R2001A0060-E1) is a variant model of Sagetel AX1811 (Report No.: RXA1711-0379EMC01). All test items tested for variant in this report. The detailed product change description please refers to the Product Change Description_Variant F2s.

1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above. This report must not be used by the client to claim product certification, approval, or endorsement any government agencies.

1.2 Test facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.



1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China
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Website: <http://www.ta-shanghai.com>
E-mail: xukai@ta-shanghai.com

2 General Description of Equipment under Test

2.1 Client Information

Applicant	MobiWire SAS
Applicant address	79 AVENUE FRANCOIS ARAGO 92017 NANTERRE CEDEX France.
Manufacturer	MobiWire SAS
Manufacturer address	79 AVENUE FRANCOIS ARAGO 92017 NANTERRE CEDEX France.

2.2 General information

EUT Description	
Device Type:	Portable Device
Product Name:	2G Feature Phone
Model Number:	F2s
IMEI:	355225110000308
HW Version:	V01
SW Version:	V01
Antenna Type:	Internal Antenna
Test Mode:	Transfer Data Mode
EUT Accessory	
Battery	Manufacturer:Guizhou Aerospace Power Science & Tech Co., Ltd. Shenzhen Branch. Model: 178135649
Adapter	Manufacturer: Dongguan Aohai Technology Co.,Ltd Model: A31A-050055U-US1
Earphone	Manufacturer: Jiujiang JuWei Electronics Co.,Ltd Model: JWEP0944-M01R
Auxiliary test equipment	
PC	PC Manufacturer: Dell Model: E5450 (SN : P48G001)
Remark: The information of the EUT is declared by the manufacturer.	



2.3 Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards

FCC Code CFR47 Part15B (2019)

ANSI C63.4 (2014)

2.4 Test Mode

Test Mode	
Mode 1:	Adapter + USB cable+ +Idle
Mode 2:	USB Copy(EUT with PC) + USB cable +Idle

During the test, the preliminary test was performed in all modes with all frequency bands (GSM), mode 2 (with USB Copy(EUT with PC) + USB cable +Idle) selected as the worst condition. The test data of the worst-case condition was recorded in this report.

3 Test Case Results

3.1 Radiated Emission

Ambient condition

Temperature	Relative humidity	Pressure
24°C~26°C	45%~50%	102.5kPa

Methods of Measurement

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The distance between EUT and receive antenna should be 3 meters. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier. During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum of radiated signal level.

The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing. During the test, the EUT is worked at maximum output power.

Set the spectrum analyzer in the following:

Below 1GHz:

RBW=100 kHz / VBW=300 kHz / Sweep=AUTO

Above 1GHz:

(a) PEAK: RBW=1MHz / VBW=3MHz/ Sweep=AUTO

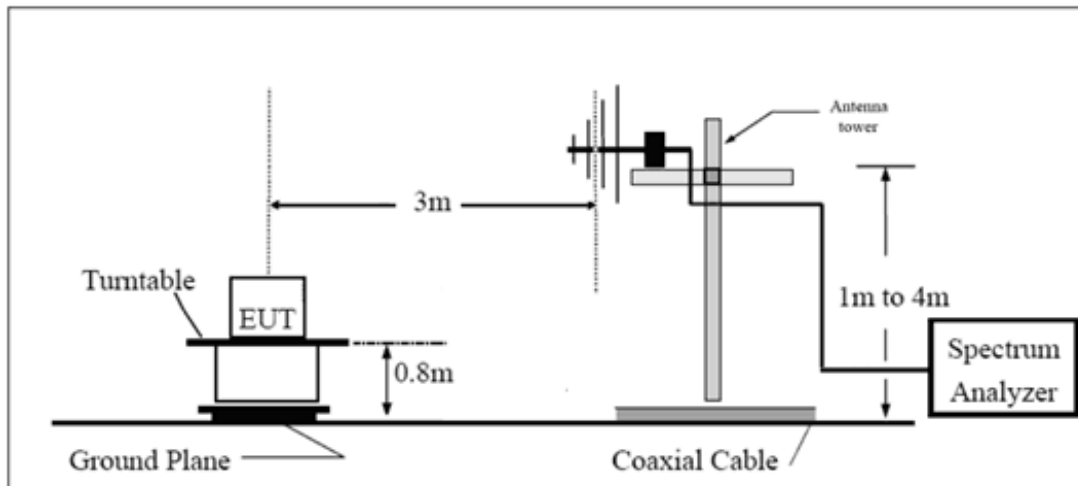
(b) AVERAGE: RBW=1MHz / VBW=3MHz / Sweep=AUTO

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

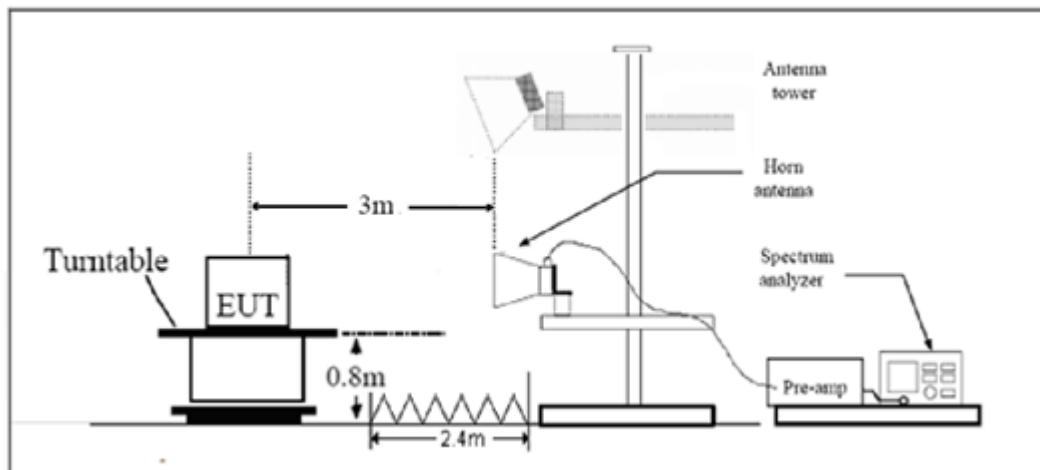
During the test, EUT is connected to a laptop via a USB cable in the case of Transfer Data mode. The EUT is used as the peripheral equipment of the PC. The data is transferred from EUT to PC; PC is connected to server via a long LAN cable.

Test Setup

Below 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

Antenna Tower meets ANSI C63.4 requirements for measurements above 1 GHz by keeping the antenna aimed at the EUT during the antenna's ascent/ descent along the antenna mast.

Limits

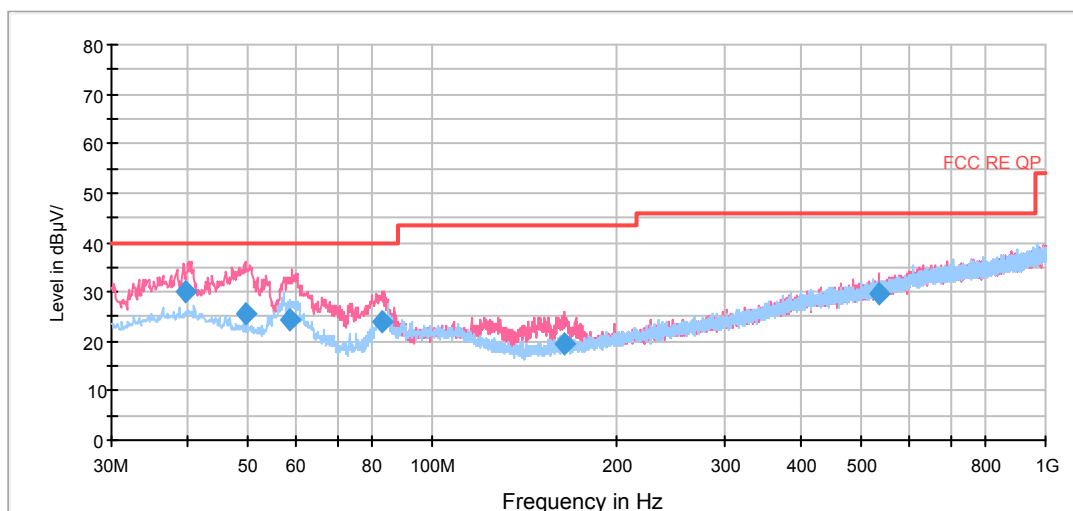
Frequency (MHz)	Field Strength (dB μ V/m)	Detector
30 -88	40.0	Quasi-peak
88-216	43.5	Quasi-peak
216 – 960	46.0	Quasi-peak
960-1000	54.0	Quasi-peak
1000-5 th harmonic of the highest frequency or 40GHz, which is lower	54 74	Average Peak

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$. $U = 3.92$ dB.

Test Results

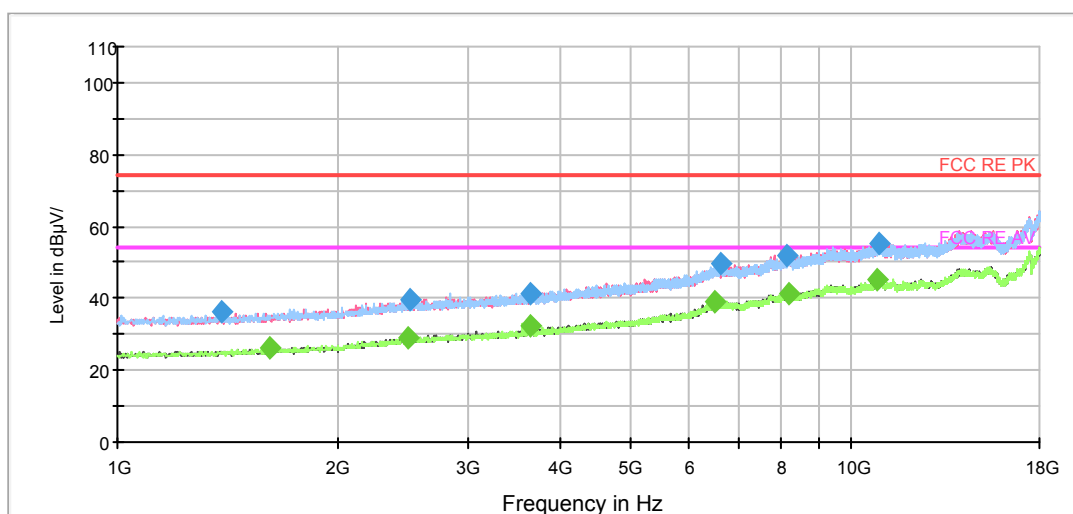
The following graphs display the maximum values of horizontal and vertical by software.
For above 1GHz, Blue trace uses the peak detection, Green trace uses the average detection.



Radiated Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
39.585000	29.9	100.0	V	336.0	16.9	10.1	40.0
49.761250	25.5	100.0	V	0.0	13.7	14.5	40.0
58.418750	24.5	100.0	V	0.0	13.9	15.5	40.0
83.031250	23.9	125.0	V	92.0	11.1	16.1	40.0
164.583750	19.6	100.0	V	295.0	10.3	23.9	43.5
536.581250	29.7	100.0	V	296.0	21.8	16.3	46.0

Remark: 1. Quasi-Peak = Reading value + Correction factor
2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)
3. Margin = Limit – Quasi-Peak



Radiated Emission from 1GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1386.750000	36.1	100.0	H	145.0	-10.7	37.9	74.0
2500.250000	39.8	200.0	H	327.0	-6.4	34.2	74.0
3656.250000	41.5	100.0	H	132.0	-3.5	32.5	74.0
6646.125000	49.5	200.0	H	144.0	5.0	24.5	74.0
8180.375000	52.0	200.0	V	0.0	8.6	22.0	74.0
10911.000000	55.2	200.0	V	144.0	13.5	18.8	74.0

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1612.000000	26.0	200.0	H	337.0	-10.0	28.0	54.0
2491.750000	29.2	200.0	V	18.0	-6.4	24.8	54.0
3649.875000	32.2	100.0	V	334.0	-3.5	21.8	54.0
6491.000000	39.0	100.0	H	7.0	4.8	15.0	54.0
8222.875000	41.5	200.0	V	50.0	8.6	12.5	54.0
10809.000000	45.2	100.0	V	353.0	13.4	8.8	54.0

3.2 Conducted Emission

Ambient condition

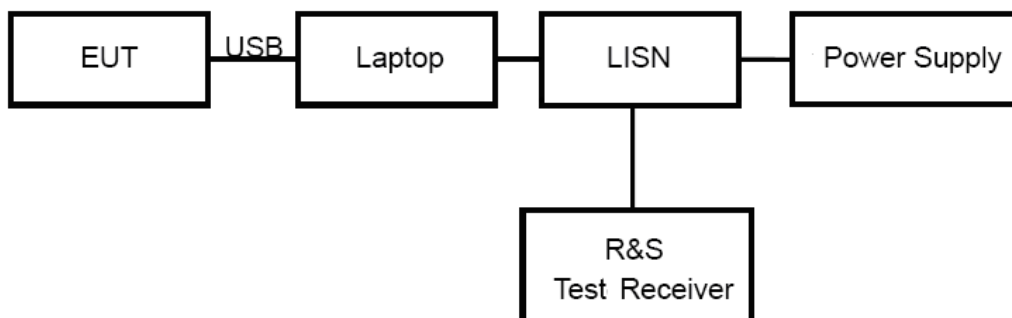
Temperature	Relative humidity	Pressure
24°C ~26°C	50%~55%	102.5kPa

Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz. The measurement result should include both L line and N line.

During the test, EUT is connected to a laptop via a USB cable in the case of Transfer Data mode. The EUT is used as the peripheral equipment of the PC. The data is transferred from EUT to PC; PC is connected to server via a long LAN cable.

Test Setup



Note: Power Supply is AC Power source and it is used to change the voltage 120V/60Hz.

Limits

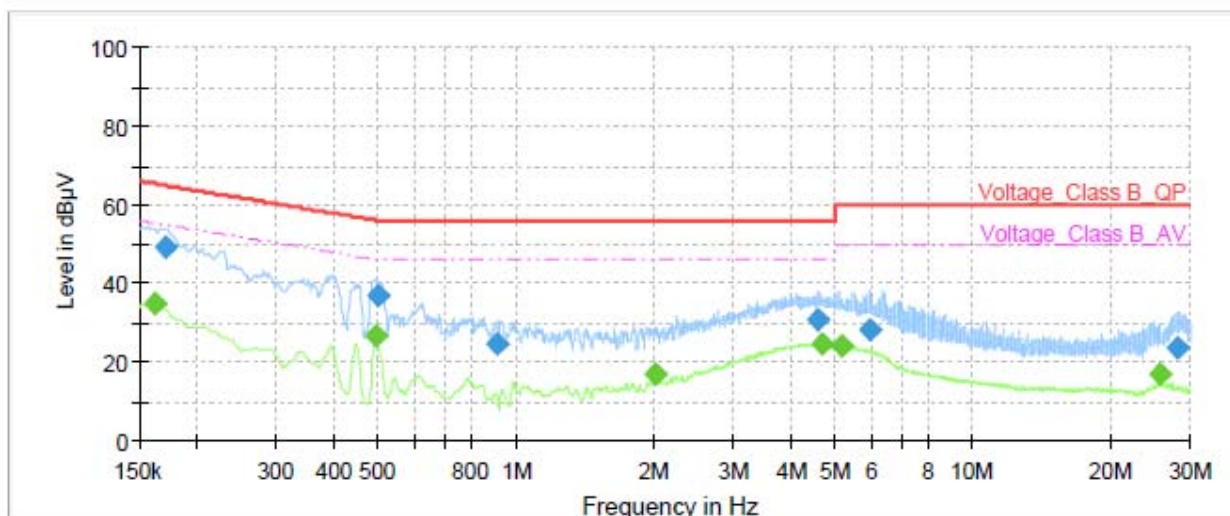
Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46 *
0.5 - 5	56	46
5 - 30	60	50
*: Decreases with the logarithm of the frequency.		

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$. $U = 2.69$ dB.

Test Results

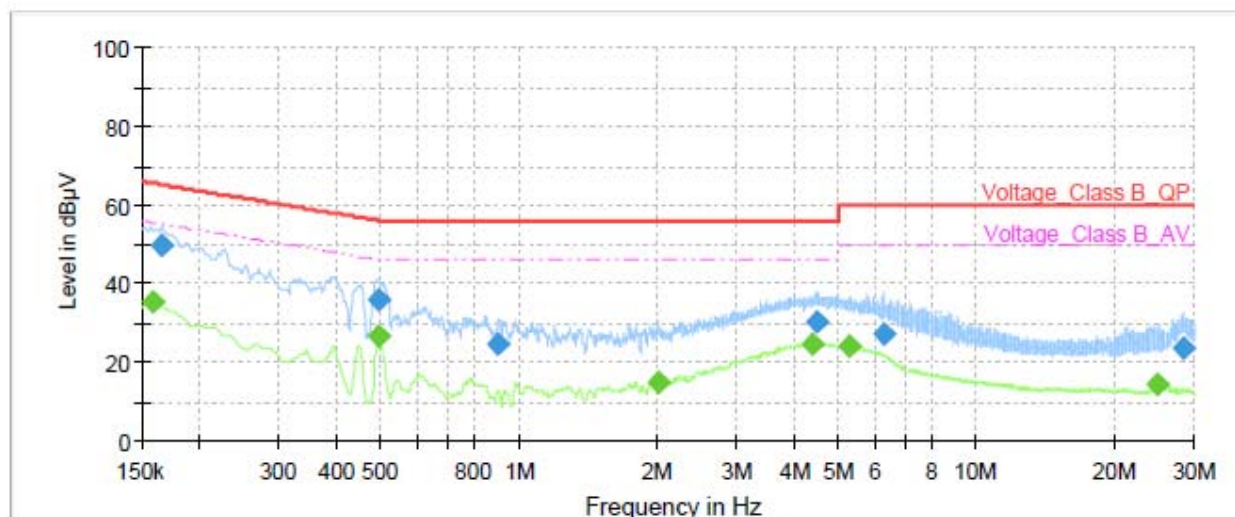
Following plots, Blue trace uses the peak detection; Green trace uses the average detection.



Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.16	---	35.08	55.40	20.32	1000.0	9.000	L1	ON	19
0.17	49.28	---	64.95	15.67	1000.0	9.000	L1	ON	19
0.49	---	26.92	46.10	19.18	1000.0	9.000	L1	ON	19
0.50	36.70	---	56.02	19.32	1000.0	9.000	L1	ON	19
0.91	24.84	---	56.00	31.16	1000.0	9.000	L1	ON	19
2.02	---	16.82	46.00	29.18	1000.0	9.000	L1	ON	19
4.58	30.64	---	56.00	25.36	1000.0	9.000	L1	ON	19
4.68	---	24.59	46.00	21.41	1000.0	9.000	L1	ON	19
5.16	---	24.29	50.00	25.71	1000.0	9.000	L1	ON	19
5.94	28.44	---	60.00	31.56	1000.0	9.000	L1	ON	19
25.74	---	17.02	50.00	32.98	1000.0	9.000	L1	ON	20
28.04	23.55	---	60.00	36.45	1000.0	9.000	L1	ON	20

L line

Conducted Emission from 150 KHz to 30 MHz



Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.16	---	35.27	55.52	20.25	1000.0	9.000	N	ON	19
0.17	49.54	---	65.17	15.63	1000.0	9.000	N	ON	19
0.49	36.07	---	56.13	20.06	1000.0	9.000	N	ON	19
0.49	---	26.92	46.10	19.18	1000.0	9.000	N	ON	19
0.90	24.45	---	56.00	31.55	1000.0	9.000	N	ON	19
2.02	---	14.89	46.00	31.11	1000.0	9.000	N	ON	19
4.36	---	24.67	46.00	21.33	1000.0	9.000	N	ON	19
4.48	30.40	---	56.00	25.60	1000.0	9.000	N	ON	19
5.29	---	24.01	50.00	25.99	1000.0	9.000	N	ON	19
6.26	27.23	---	60.00	32.77	1000.0	9.000	N	ON	19
24.99	---	14.49	50.00	35.51	1000.0	9.000	N	ON	20
28.45	23.69	---	60.00	36.31	1000.0	9.000	N	ON	20

N line
Conducted Emission from 150 KHz to 30 MHz

4 Main Test Instrument

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Time
Spectrum Analyzer	R&S	FSV40	15195-01-00	2019-05-19	2020-05-18
EMI Test Receiver	R&S	ESCI	100948	2019-05-19	2020-05-18
Trilog Antenna	SCHWARZBECK	VULB 9163	9163-201	2017-11-18	2020-11-17
Horn Antenna	R&S	HF907	100126	2018-07-07	2020-07-06
Standard Gain Horn	ETS-Lindgren	3160-09	00102643	2018-06-20	2020-06-19
EMI Test Receiver	R&S	ESR	101667	2019-05-19	2020-05-18
LISN	R&S	ENV216	101171	2018-12-15	2021-12-14
Bore Sight Antenna mast	ETS	2171B	00058752	/	/
Test software	EMC32	R&S	9.26.0	/	/