

File Number **18/31700923M3****TEST REPORT**
FCC/ISED Test Report**Petitioner's Reference: DIAGNOSTIC GRIFOLS S.A.**Customer Address : Psj. Fluvial, 24
08150 Parets del Vallès, Barcelona**Equipment: QNext**

Brand:	GRIFOLS	Model:	215550
s/n:	prototype	Power Supply:	AC 120 VAC 60Hz
EUT Operating Frequencies: 2 Tag Readers of 125KHz and 1 RFID reader of 13.56 MHz (pre-certified FCC ID: RJPRDHC-0202N0-0X, IC ID: 2236B-5553)			

Result: compliesIt has been tested and complies the standard specifications Applicable / s
See specifications applied on page 6**Applicable Standards****Emission standard/s: FCC Title 47 part 15 Subpart C & RSS-Gen Issue 5, April 2018 and ANSI C63.10****Date of issue:** Bellaterra, July 10, 2018**M3:** This report replaces and annuls the report with certificate number 18/31700923M2 dated 2018-07-04**Modifications performed:** Added conducted emissions table for AC supply lines separated.Jordi Geis Estrada
Technical Manager
Electrical and Electronics
LGAI Technological Center S.A.

The results refer only and exclusively to the sample, product or material delivered for testing in "Received Material" section above. The equipment has been tested under conditions stipulated by standard(s) quoted in this document.
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This is the first page of the document, which consists of 18 pages of which 11 are annexes.

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1. EQUIPMENT RECEIVED AND TESTED

EQUIPMENT: QNext

Brand:	GRIFOLS	Model:	215550
s/n:	prototype	Power Supply:	AC 120 VAC 60Hz
SW version:	Test Software	HW Version:	1.0

* **Note:** The equipment with model number 215550 is equivalent to the equipment with model number DG 518

Test product reception:	2018-03-12
Test initial date:	2018-03-12
Test final date:	2018-03-14

1.1. Test configuration

Power Supply:	AC 120 VAC 60Hz
Set-up:	Tabletop
Test exercise:	Equipment continuously operating with two Tag readers of 125KHz and a RFID module of 13.56 MHz working.
Equipment size:	930 x 660 x 520 mm

1.2. Auxiliary and control equipment

Keyboard and mouse
Personal Computer Brand Dell Inspiron 8400

1.3. Input/output wires

Shielded LAN cable Cat VI length 3m.

2. APPLICABLE STANDARDS

2.1. TEST APPLICABLE STANDARDS

Standard: FCC Title 47 part 15 Subpart C & RSS-Gen Issue 5, April 2018 and ANSI C63.10 based on standards.

Basic standard: FCC Title 47 part 15 Subpart C & RSS-Gen Issue 5, April 2018 and ANSI C63.10

☒ Radio-frequency radiated emissions (9kHz -18000MHz)

Co-Location Testing: *In order to satisfy test requirements for multiple transmitters, co-location testing was performed during this test where the 125kHz tag readers and 13.56MHz RFID module were working simultaneously*

Basic standard: FCC Title 47 part 15 Subpart C & RSS-Gen Issue 5, April 2018 and ANSI C63.10

☒ Power line conducted emissions (0,15-30MHz)

Basic standard: FCC Title 47 part 15 Subpart C & RSS-Gen Issue 5, April 2018 and ANSI C63.10

☒ Antenna Requirements

2.1.1. Acceptance criteria for the test

According to standard **FCC Title 47 part 15 Subpart C & RSS-Gen Issue 5, April 2018 and ANSI C63.10**

2.2. Test facilities ID

FCC Test Firm Registration Number: 507478
ISED Assigned Code: 5766A

2.3. Test procedures

Radio-frequency radiated emissions: C5401665
Power line conducted emissions: C5401665
Antenna Requirements C5401665

2.4. Measuring uncertainties

Radio-frequency radiated emissions: $\pm 4,3$ dB
Power line conducted emissions: $\pm 2,1$ dB

Expanded uncertainty measurement is obtained multiplying the typical uncertainty measurement with a coverage factor $k=2$, which corresponds to a confidence level of 95% for a normal distribution. The typical uncertainty measurement has been determined in accordance with document EA-4/02.

2.5. Modifications

No modifications were made.

2.6. USED EQUIPMENT

RADIO-FREQUENCY RADIATED EMISSIONS					
INSTRUMENT	MARK	MODEL	NUMBER	LAST CALIBRATION	NEXT CALIBRATION
SEMI ANECHOIC CHAMBER SAC2	EUROSHIELD	TC2	104563	2017-04-27	2019-04-27
EMI RECEIVER	R&S	ESU 40	1041155	2017-07-20	2018-07-20
BILOG ANTENNA	SCHWARZBECK MESS- ELEKTRONIK	VULB 9165	104503	2017-05-17	2018-05-18
LOOP ANTENNA	EMCO	6502	05-ER-019	2017-12-01	2018-12-01
HORN ANTENNA	EMCO	3115	05-ER-017	2017-12-12	2018-12-12
LOG-PERIODIC ANTENNA	R&S	HL050	1041226	2016-06-30	2018-06-30
PREAMPLIFIER	BONN ELEKTRONIK	BLNA 0110-01N	1041351	2017-05-22	2018-05-22
PREAMPLIFIER	BONN ELEKTRONIK	BLMA 0126-2M	1041325	2017-09-06	2018-09-06

POWER LINE CONDUCTED EMISSIONS					
INSTRUMENT	MARK	MODEL	NUMBER	LAST CALIBRATION	NEXT CALIBRATION
EMI RECEIVER	R&S	ESCS 30	104952	2017-06-01	2018-06-01
LISN	R&S	ESH2-Z5	05-ER-085	2017-04-25	2018-04-25
ISN	TESEQ	ISN ST08	1041106	2016-05-17	2018-05-17
TRANSIENT LIMITER	HP	11947A	05-ER-187	2017-11-16	2018-11-16

2.7. Environmental conditions

See results sheets

3. RESULT

PRODUCT: QNext			
Brand:	GRIFOLS	Model:	215550
s/n:	prototype	Power Supply:	AC 120 VAC 60Hz
TESTING		RESULTS	
Radio-frequency radiated emissions*.		Pass	Note: 3
<i>*Co-Location Testing: In order to satisfy test requirements for multiple transmitters, co-location testing was performed during this test where the 125kHz tag readers and 13.56MHz RFID module were working simultaneously)</i>			
Power line conducted emissions.		Pass	Note: 4
Antenna Requirements		Pass	N / A
1: The measured results are above the upper limit, even considering the uncertainty interval. 2: The measured results are above the specified limits, but within the uncertainty interval. It is therefore not possible to state compliance based on the 95% level of confidence. However, the results indicate that non-compliance is more probable than compliance 3: The measured results are below the specified limits, but within the uncertainty interval. It is therefore not possible to state compliance based on the 95% level of confidence. However, the results indicate that compliance is more probable than non-compliance 4: The measured results are within the limits, including the uncertainty interval.			

Service Quality Assurance

Applus+, guarantees that this work has been made in accordance with our Quality and Sustainability System, fulfilling the contractual conditions and legal norms.

Within our improvement program we would be grateful if you would send us any commentary that you consider opportune, to the person in charge who signs this document, or to the Quality Manager of Applus+, in the following e-mail address: satisfaccion.cliente@applus.com

4. ANNEXES

4.1. Test Results

4.1.1. Radiated Emissions

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10-2013. The test distance is 3m. The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013.

According to FCC Part 15.247(d): radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)). According to FCC Part 15.205, Restricted bands.

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

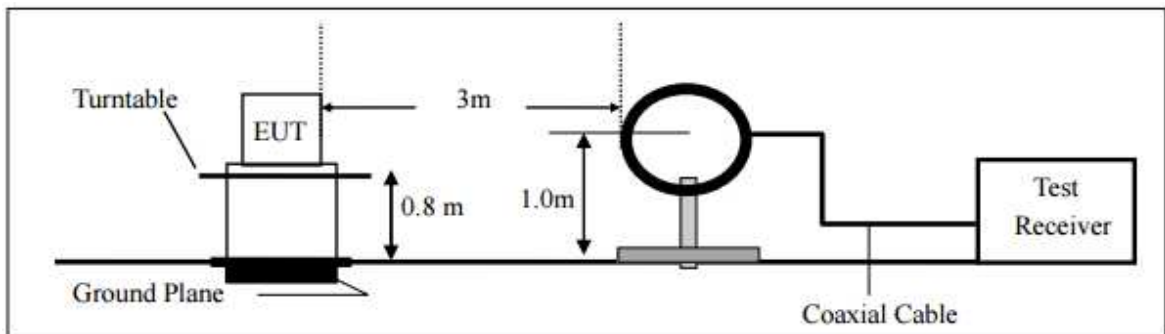
Restricted Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009~0.490	2400/F(KHz)	20 log (uV/m)	300
0.490~1.705	2400/F(KHz)	20 log (uV/m)	30
1.705~30.0	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Limits of Radiated Emission Measurement(Above 1000MHz)

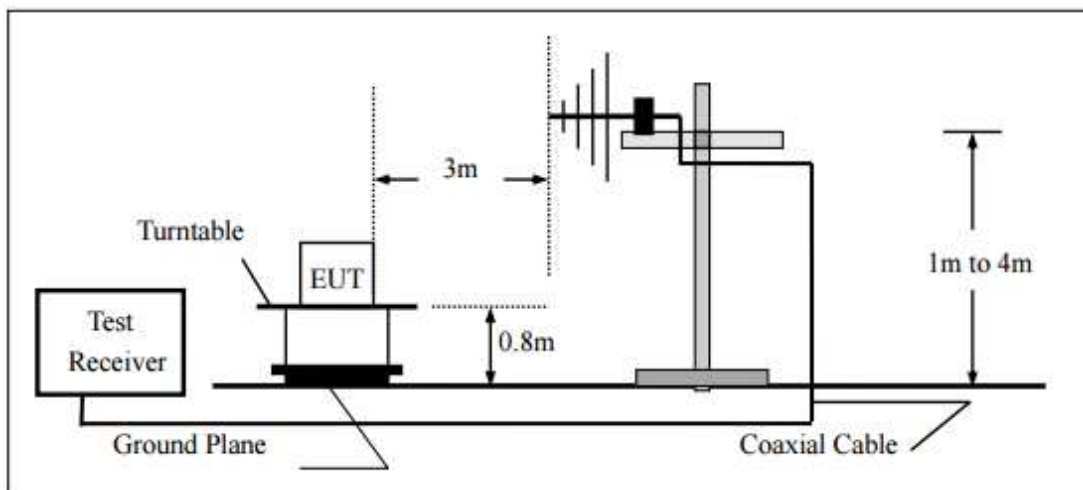
Frequency(MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Test Configuration

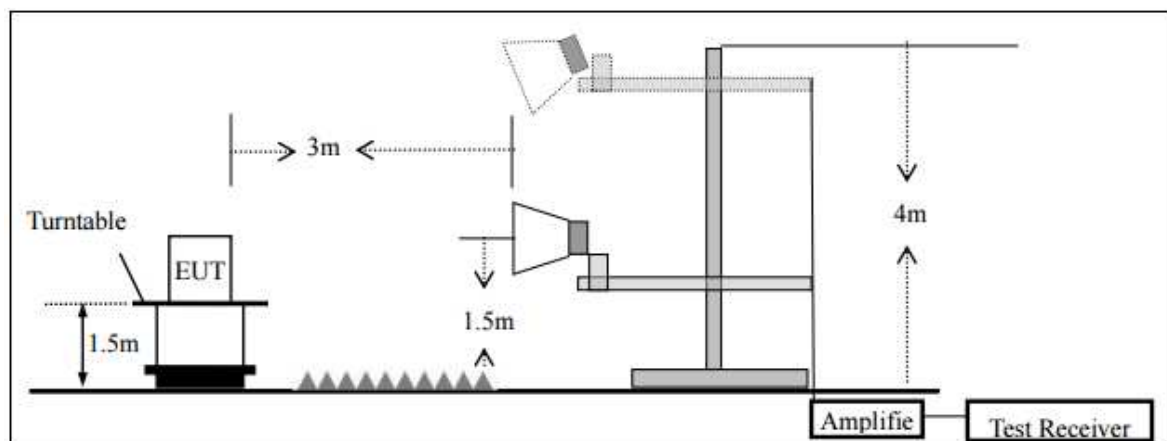
- For radiated emissions below 30MHz:



- For radiated emissions from 30MHz to 1000MHz:



- For radiated emissions above 1000MHz:



Test Procedures

The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.

The EUT was placed on the top of a rotating table 0.8 m for below 1GHz and 1.5m for above 1GHz the ground at a 3 meter. The table was rotated 360 degrees to determine the position of the highest radiation.

The height of the equipment or of the substitution antenna shall be 0.8 m for below 1GHz and 1.5m for above 1GHz; 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.

For the radiated emission test above 1GHz:

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

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.

If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.

For the actual test configuration, please refer to the related Item –EUT Test Photos.

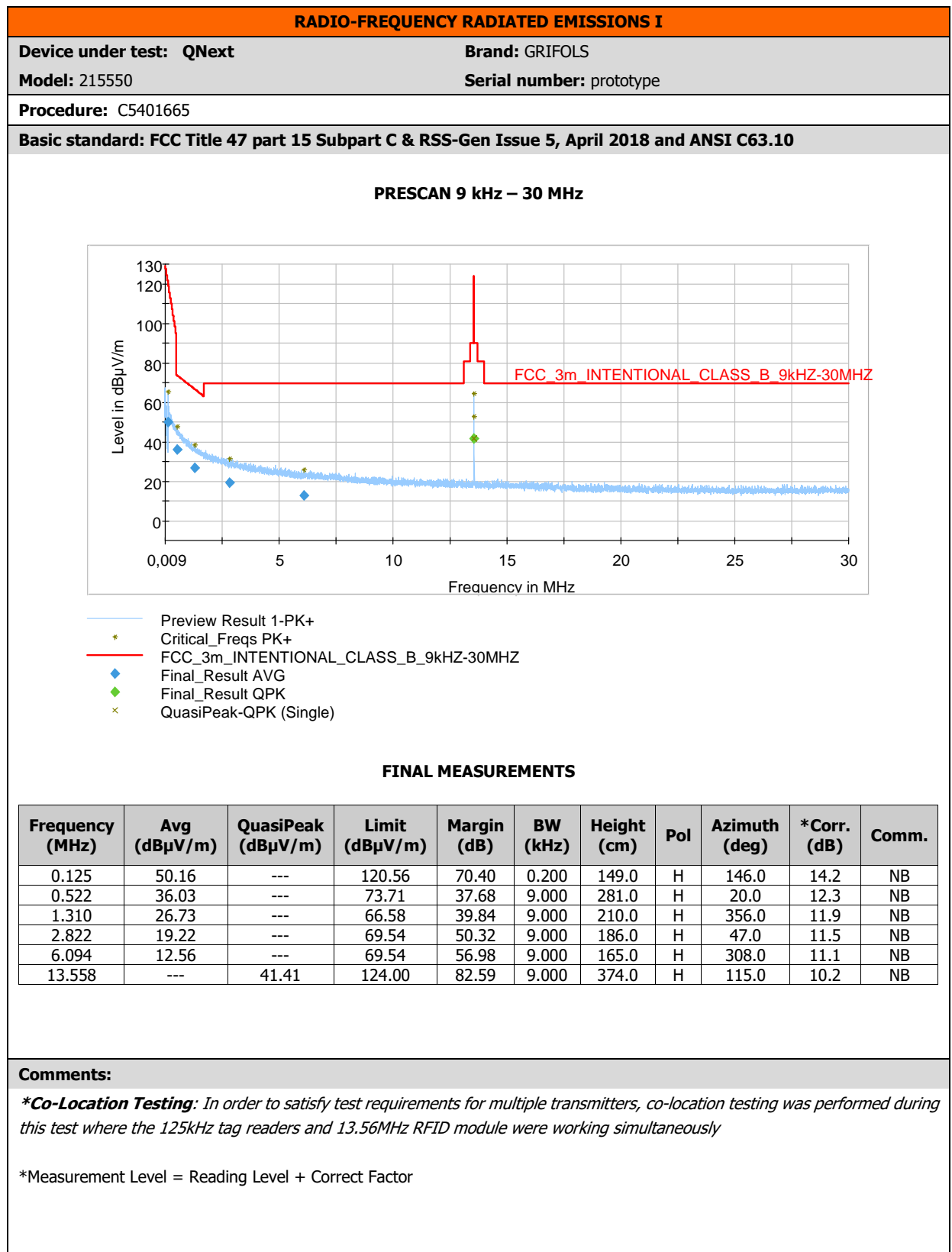
Note: Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

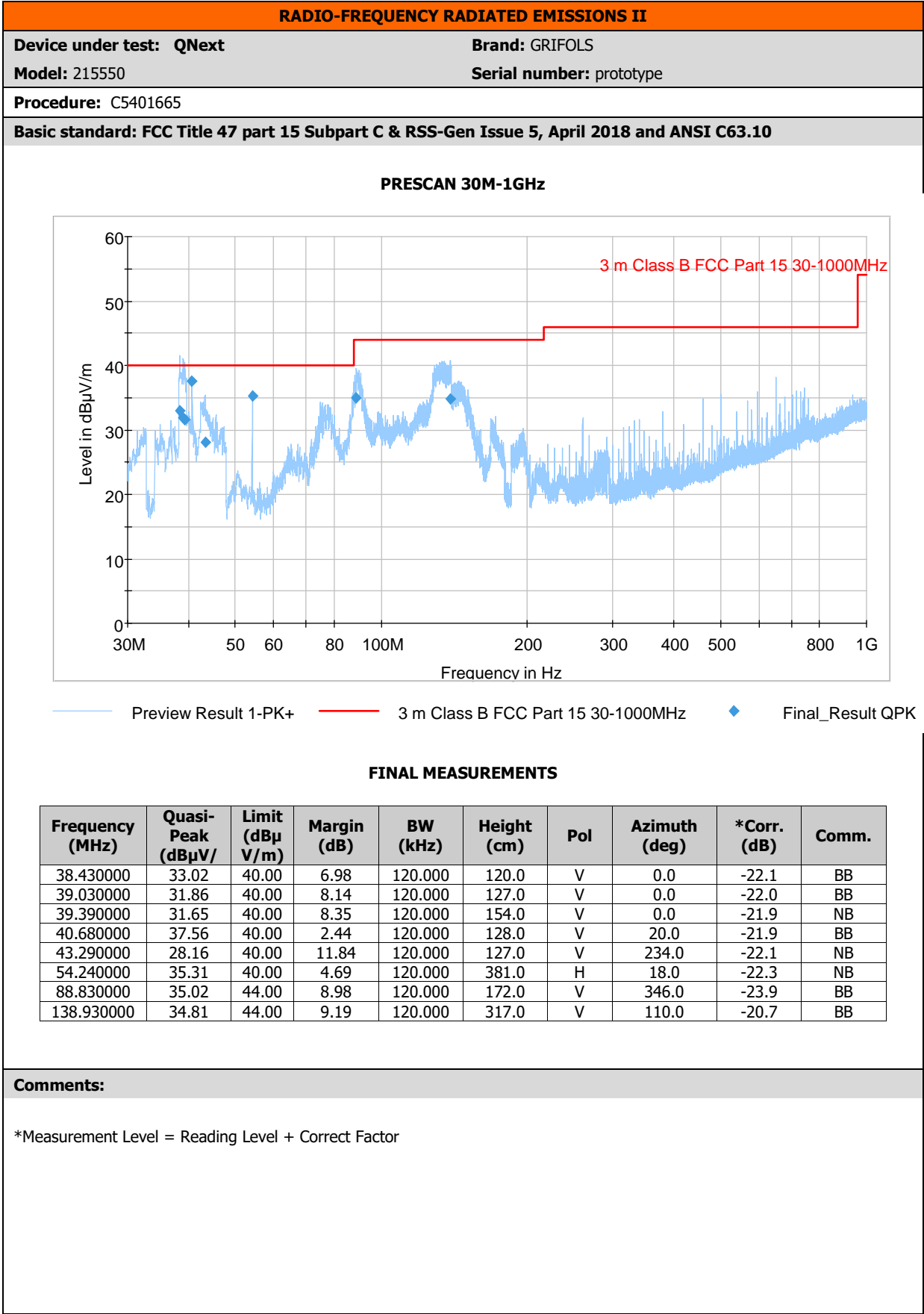
During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

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

Note: for the frequency ranges below 30 MHz, a narrower RBW is used for these ranges but the measured value should add a RBW correction factor (RBWCF) where $RBWCF [dB] = 10 \cdot \lg(100 [kHz] / \text{narrower RBW [kHz]})$. the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

RADIO-FREQUENCY RADIATED EMISSIONS														
Device under test: QNext		Brand: GRIFOLS												
Model: 215550		Serial number: prototype												
Auxiliary equipment: Keyboard and mouse Personal Computer Brand Dell Inspiron 8400		Supply: AC 120 VAC 60Hz												
DUT exercise: Equipment continuously operating with two Tag readers of 125KHz and a RFID module of 13.56 MHz working		Input/output cable: Shielded LAN cable Cat VI length 3m.												
Technician: Andreu Tey / M. Riverola / J. C. Parrilla		Frequency range: 9KHz – 18 GHz												
Test date: 2018-03-13		Procedure: C5401665												
Measurement equipment: Receiver EMI RS ESU408		Test Area: Anechoic chamber, SAC-2												
Basic standard: FCC Title 47 part 15 Subpart C & RSS-Gen Issue 5, April 2018 and ANSI C63.10														
<table border="1"> <tr> <td>Temperature:</td> <td>20.9</td> <td>°C</td> </tr> <tr> <td>Humidity:</td> <td>46</td> <td>%</td> </tr> <tr> <td>Atm. Pressure:</td> <td>1001.2</td> <td>hPa</td> </tr> </table>						Temperature:	20.9	°C	Humidity:	46	%	Atm. Pressure:	1001.2	hPa
Temperature:	20.9	°C												
Humidity:	46	%												
Atm. Pressure:	1001.2	hPa												
EUT: Tabletop	Class B	Test Area SAC2	Distance 3 m	PreScan 4 Faces	Evaluation Individual									
RESULTS: Pass														
Identification		Emissions		Main emission source and type										
DUT: Device under test AUX: Auxiliary Devices SYS: DUT + AUX BB : Broad-band NB : Narrow-band QP: Quasi-peak		Limit - I <= QP < Limit Lim – AVG <= QP < Lim I=Uncertainty		EUT, NB/BB										
Comments														





RADIO-FREQUENCY RADIATED EMISSIONS III

Device under test: QNext

Brand: GRIFOLS

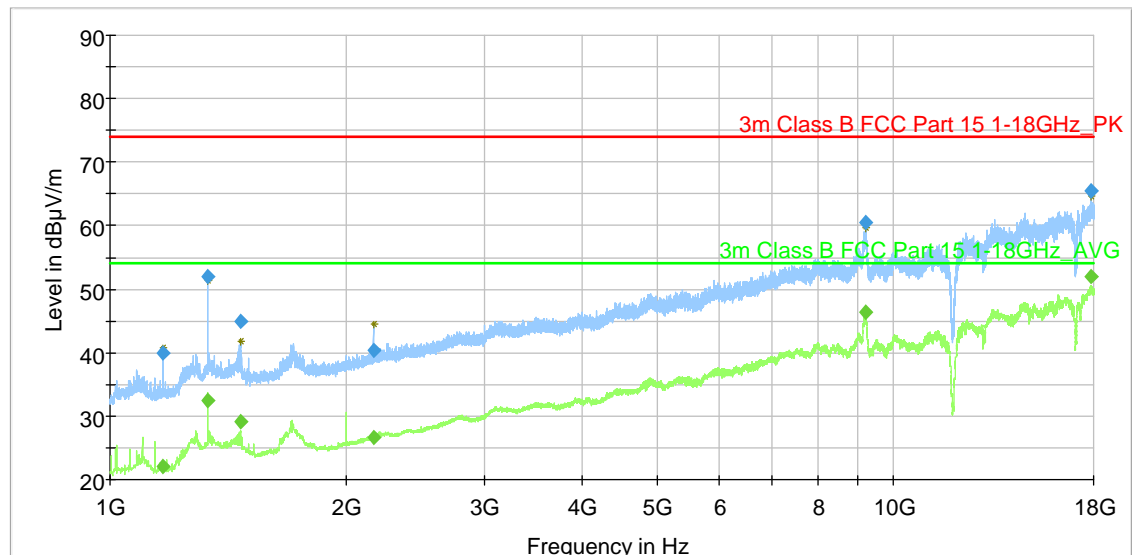
Model: 215550

Serial number: prototype Prototype

Procedure: C5401665

Basic standard: FCC Title 47 part 15 Subpart C & RSS-Gen Issue 5, April 2018 and ANSI C63.10

PRESCAN 1-18 GHz



— Preview Result 2-AVG
* Critical_Freqs AVG
— 3m Class B FCC Part 15 1-18GHz_PK
◆ Final_Result PK+

— Preview Result 1-PK+
* Critical_Freqs PK+
— 3m Class B FCC Part 15 1-18GHz_AVG
◆ Final_Result AVG

FINAL MEASUREMENTS

Freq. (MHz)	Max Peak (dBμV/)	Avg (dBμV/ m)	Limit (dBμV/ m)	Margin (dB)	BW (kHz)	Height (cm)	Pol	Azimuth (deg)	*Corr. (dB)	Comm.
1166.75	39.94	---	74.00	34.06	1000	152.0	H	51.0	-25.3	NB
1166.75	---	22.14	54.00	31.86	1000	152.0	H	51.0	-25.3	NB
1333.50	---	32.48	54.00	21.52	1000	127.0	H	87.0	-23.8	NB
1333.50	51.96	---	74.00	22.04	1000	127.0	H	87.0	-23.8	NB
1467.75	45.01	---	74.00	28.99	1000	198.0	V	17.0	-22.8	NB
1467.75	---	29.23	54.00	24.77	1000	198.0	V	17.0	-22.8	NB
2166.50	40.37	---	74.00	33.63	1000	382.0	V	290.0	-18.1	NB
2166.50	---	26.65	54.00	27.35	1000	382.0	V	290.0	-18.1	NB
9203.00	---	46.37	54.00	7.63	1000	248.0	H	69.0	6.0	NB
9203.00	60.49	---	74.00	13.51	1000	248.0	H	69.0	6.0	NB
17863.5	65.48	---	74.00	8.52	1000	120.0	V	267.0	16.8	NB
17863.5	---	51.94	54.00	2.06	1000	120.0	V	267.0	16.8	NB

Comments:

*Measurement Level = Reading Level + Correct Factor

4.1.2. Conducted Emissions

Limit of Conducted Emissions

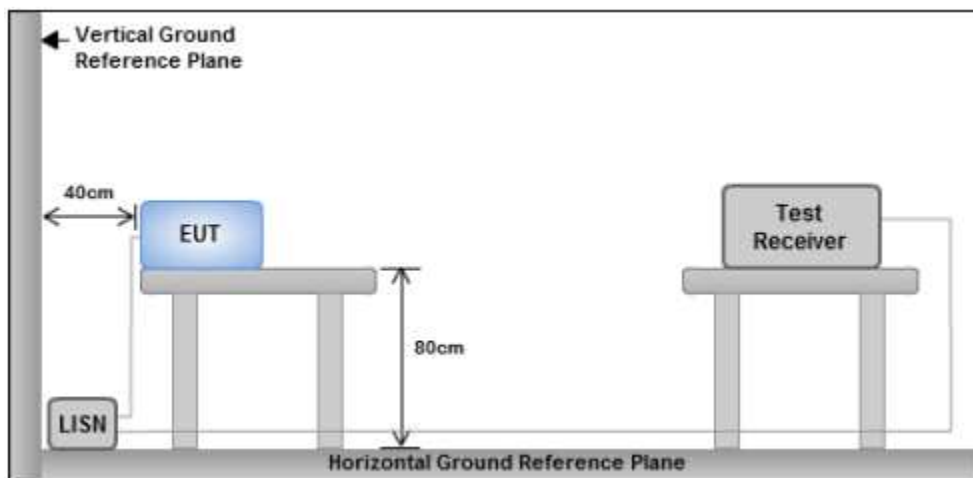
Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements are made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V/60Hz

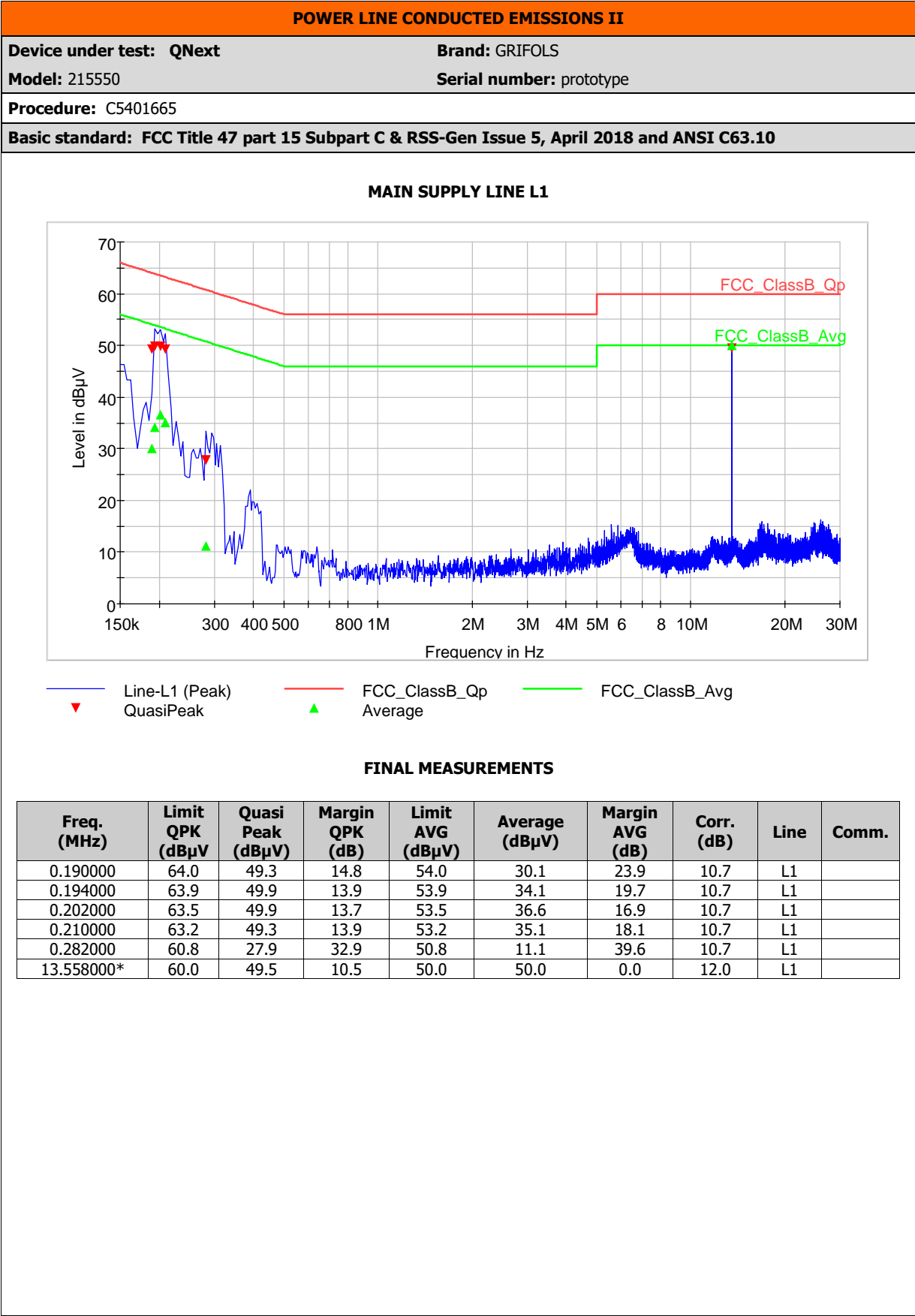
Test Setup

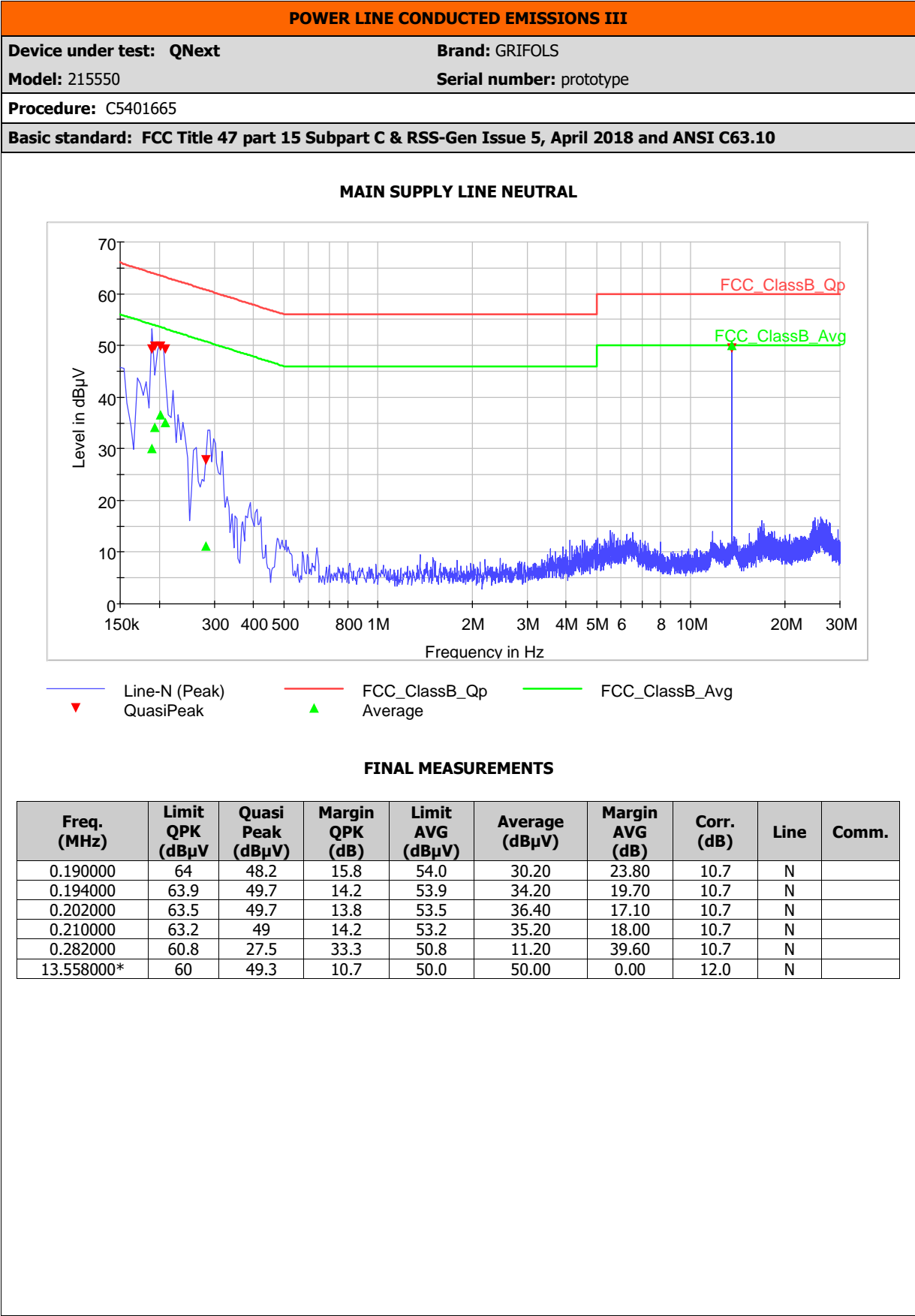


Note 1: Support units were connected to second LISN.

Note 2: Both of LISNs are 80 cm from EUT and at least 80 cm from other units and other metal planes.

POWER LINE CONDUCTED EMISSIONS										
Device under test: QNext Model: 215550 Test disposition: Tabletop Auxiliary equipment: Keyboard and mouse Personal Computer Brand Dell Inspiron 8400 DUT exercise: Equipment continuously operating with two Tag readers of 125KHz and a RFID module of 13.56 MHz working	Brand: GRIFOLS Serial number: prototype Supply: AC 120 VAC 60Hz Input/output cable: Shielded LAN cable Cat VI length 3m.									
Technician: Andreu Tey Test date: 2018-03-12 Measurement equipment: Receiver EMI RS ESCS30	Test Area: Faraday chamber, FAC-0 Procedure: C5401665									
Basic standard: FCC Title 47 part 15 Subpart C & RSS-Gen Issue 5, April 2018 and ANSI C63.10										
<table border="1"> <tr> <td>Temperature:</td> <td>23.2</td> <td>°C</td> </tr> <tr> <td>Humidity:</td> <td>43.6</td> <td>%</td> </tr> <tr> <td>Atm. Pressure:</td> <td>998.3</td> <td>hPa</td> </tr> </table>		Temperature:	23.2	°C	Humidity:	43.6	%	Atm. Pressure:	998.3	hPa
Temperature:	23.2	°C								
Humidity:	43.6	%								
Atm. Pressure:	998.3	hPa								
POWER LINE CONDUCTED EMISSIONS										
Supply										
Mains Supply										
T. in power Supply: (dBμV)	Pass Vgp < lim QP ; Vavg < lim AVG									
Source and type of the most important emissions										
Source: Device under test	Type: Narrow Band									
Telecommunication ports										
Port type: T. in telecommunication ports (dBμV)	PASS Vpeak < lim AVG									
Source and type of the most important emissions										
Source: Device under test	Type: Narrow Band									
RESULTS: Pass										
Comments:										
<p>*The frequency 13.558 MHz is one of the fundamental frequencies of the equipment and is excluded of the scope of this test.</p>										





4.1.3. Antenna Requirements

ANTENNA REQUIREMENTS	
Device under test: QNext Model: 215550 Test disposition: Tabletop Auxiliary equipment: Keyboard and mouse Personal Computer Brand Dell Inspiron 8400 DUT exercise: Equipment continuously operating with two Tag readers of 125KHz and a RFID module of 13.56 MHz working	Brand: GRIFOLS Serial number: prototype Supply: AC 120 VAC 60Hz Input/output cable: Shielded LAN cable Cat VI length 3m.
Basic standard: FCC Title 47 part 15 Subpart C & RSS-Gen Issue 5, April 2018 and ANSI C63.10	
Procedure: C5401665	
RESULTS: Pass	
Comments: Excerpt from 15.203 of the FCC Rules/Regulations: "An intentional radiator antenna shall be designed to ensure that no antenna other than furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section." The antennas of the Insert Equipment Tested are permanently attached. There are no provisions for connection to an external antenna.	