CERTIFICATION TEST REPORT

CFR 47 Part 15 Subpart B

Test Report File No.	14-IST-0358	■ Basic	□ Alternate
Date of Receipt	May 14, 2014	Begin of test date	June 12, 2014
Date of Issue	June 26, 2014	End of test date	June 19, 2014

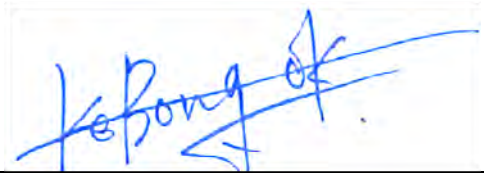
Kind of Product	Portable Music Player
Basic Model(s)	PPE21
FCCID	QDMPPE21

Applicant	IRIVER LIMITED.
Address	Iriverhouse, 5, Bangbae-ro 18-gil, Seocho-gu, Seoul, Korea
Manufacturer	IRIVER LIMITED.
Address	Iriverhouse, 5, Bangbae-ro 18-gil, Seocho-gu, Seoul, Korea

Standard	**Section 15.107, Section 15.109 [Class B Equipment]**

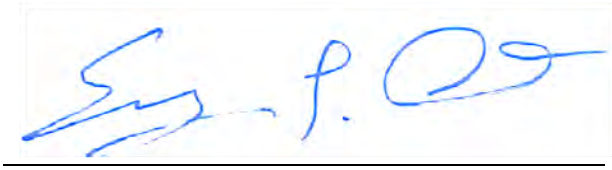
Test Result ■ **Positive** □ **Negative**

Tested By



B.O. KO.

Reviewed By



S.J.CHO

Comment(s)

- Investigations requested : Measurement to the relevant clauses of FCC rules and regulations Part 15 Subpart B – Unintentional Radiators, Class B.
- The test report with appendix consists of 31 pages.
- The test result only responds to the tested sample.
- It is not allowed to copy this report even partly without the allowance of IST EMC Laboratory.
- This equipment as for has been shown to be capable of continued compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4

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INFORMATIONS OF TEST LABORATORY

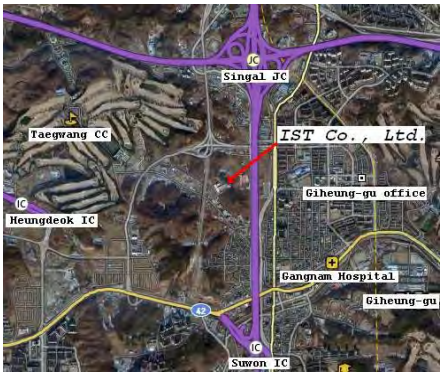
EMC LABORATORY of IST Co., Ltd.

52-20, Sinjeong-ro 41beon-gil, Giheung-gu,

Gyeonggi-do, Korea.

TEL : +82 31 326 6700 FAX : +82 31 326 6797

KOLAS Testing No. : KT118
RRA & FCC(DoC) Designation No. : KR0018
FCC Registration No. : 400603
VCCI Member No. : 1739



Measurement Uncertainty

Conducted Emissions	U = 2.98 [dB] (Confidence level approximately 95 %, k = 2)
Radiated Emissions (Antenna - Horizontal)	U = 3.83 [dB] (Confidence level approximately 95 %, k = 2)
Radiated Emissions (Antenna - Verical)	U = 4.50 [dB] (Confidence level approximately 95 %, k = 2)

PRODUCT INFORMATION

Body Color	Smoky Blue
Body Material	Aluminum
Display	3.31inch WVGA(480X800) AMOLED Touch Screen
Supported Audio Formats	WAV, FLAC, WMA, MP3, OGG, APE(Normal High Fast), AAC, ALAC, AIFF, DFF, DSF
Sample Rate	FLAC, WAV, ALAC, AIFF : 8kHz~192KHz(8/16/24bits per Sample) DSD Native : DSD64(1bit 2.8MHz), Stereo/ DSD128(1bit 5.6MHz), Stereo
Output Level	Unbalance 2.0Vrms/ Balance 1.7Vrms(Condition No Load)
DAC	Cirrus Logic CS4398 X 1(Dual DAC)
Decoding	Support up to 24bit/ 192kHz Bit to Bit Decoding
Input	USB Micro-B input(for charging & data transfer(PC&MAC)/ Connection Mode : MTP(Media Device)
Outputs	PHONES(3.5mm)/ Optical Out(3.5mm)/ Balanced Out(2.5mm, only 4-pole supported)
Wi-Fi	802.11 b/g/n(2.4GHz)
Bluetooth	V4.0
Dimensions	2.16” (55mm)[W] X 4.37” (111mm)[H] X0.58” (14.9mm)[D]
Weight	5.99 oz(170 g)
Feature Enhancements	Firmware upgrade supported(OTA)
Audio Specification	
Frequency Response	±0.023dB(Condition:20Hz~20kHz)Unbalance & Balance/±0.6dB(Conditon:10Hz~70kHz)Unbalance & Balance
S/N	115dB @ 1kHz, Unbalance/ 115dB @ 1kHz, Balance
Crosstalk	127dB @ 1KHz, Unbalance/ 130dB @ 1kHz, Balance
THD+N	0.0009% @ 1kHz, Unbalance/ 0.0008% @ 1kHz, Balance
IMD SMPTE	0.0004% 800Hz 10kHz(4:1) Unbalance/ 0.0003% 800Hz 10kHz(4:1) Balance
Output impedance	Balanced out 2.5mm(1 ohm)/ PHONES 3.5mm(2 ohm)
Clock Jitter	50ps
Memory	Built-in Memory : 64 GB[NAND] External Memory : microSD(Max, 128GB) X 1
Battery	Capacity : 3100 mAh 3.7V Li-Polymer Battery
Supported OS	Supported OS : Window XP, Window 7,8(32/64bit) MAC OS X 10.7.and up

- EMC suppression device is not used during the test.
- Please refer to user’s manual.

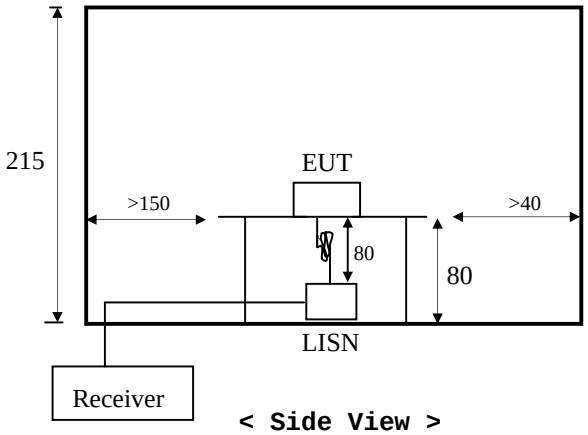
DESCRIPTIONS OF TEST

Conducted Emissions:

The measurement were performed over the frequency range of 0.15 MHz to 30 MHz using a 50 Ω/50uH LISN as the input transducer to a Spectrum Analyzer or a Field Intensity Meter. The measurements were made with the detector set for "Peak" amplitude within a bandwidth of 10KHz or for "quasi-peak" & "Average" within a bandwidth of 9 KHz.

-Procedure of Test

The line-conducted facility is located inside a shielded room No.1. A 1 m X 1.5 m wooden table 80 cm height is placed 40 cm away from the vertical wall and 1.5 m away from the other wall of the shielded room. The R/S ESH3-Z5 and Hyup-Rip KNW-407 LISN are bonded to bottom of the shielded room. The EUT is located on the wooden table with distance more than 80 cm from the LISN and powered from the Hyup-Rip LISN. The peripheral equipment is powered from the other LISN. Power to the LISNs are filtered by a noise cut power line filters. All electrical cables are shielded by braided tinned steel tubing with inner ϕ 1.2 cm. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply lines will be connected to the Hyup-Rip LISN. All interconnected cables more than 1 m were shortened by non-inductive bundling to a 1 m length. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating conditions. The RF output of the LISN was connected to the R/S receiver to determine the frequency producing the maximum emission from the EUT. The frequency producing the maximum level was reexamined using Quasi-Peak mode by manual measurement, after scanned by automatic Peak mode for frequency range from 0.15 to 30 MHz. The bandwidth of the receiver was set to 10 kHz. The EUT, peripheral equipment, and interconnecting cables were arranged and manipulated to maximize each EME emission.



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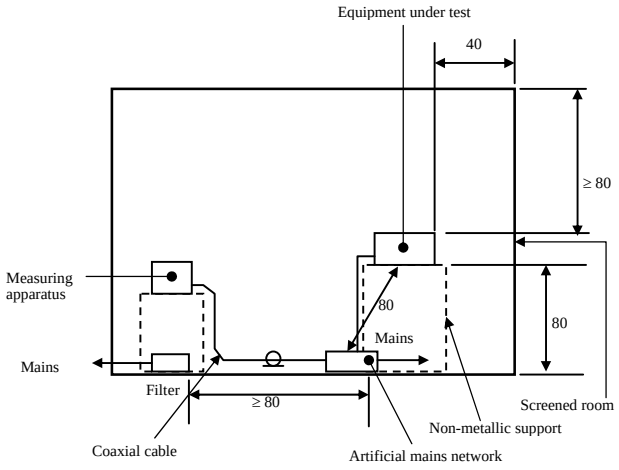


< Concept Drawing >

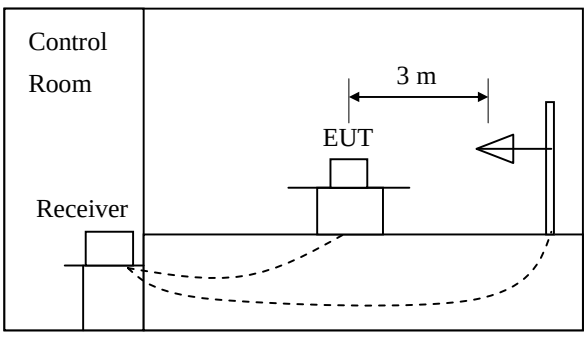
DESCRIPTION OF TEST

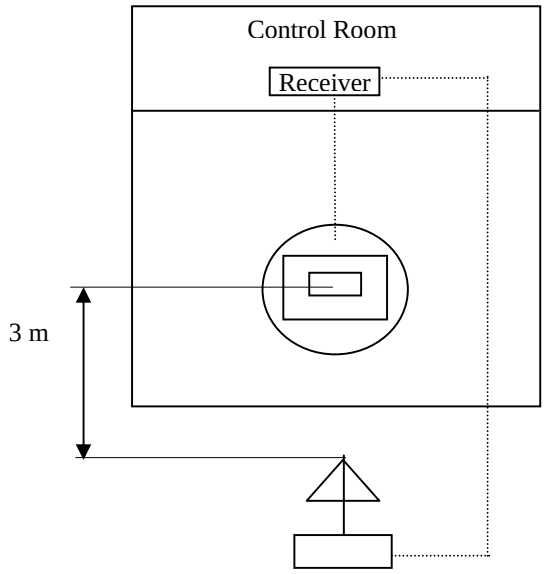
Radiated Emissions:

The measurement was performed over the frequency range of 30 MHz to 1 GHz using antenna as the input transducer to a Spectrum analyzer or a Field Intensity Meter. The measurement was made with the detector set for "quasi-peak" within a bandwidth of 120 KHz.

-Procedure of Test

Preliminary measurements were made at 3 meter using bi-log antennas, and spectrum analyzer to determine the frequency producing the max. emission in anechoic chamber. Appropriate precaution was taken to ensure that all emission from the EUT were maximized and investigated. The system configuration, mode of operation, turn-table azimuth and height with respect to the antenna were noted for each frequency found. The spectrum was scanned from 30 MHz to 1000 MHz using S/B bi-log antenna. Above 1 GHz, linearly polarized double ridge horn antennas were used. Final measurements were made at open site with 3-meters test distance using S/B bi-log antenna. The OATS have been verified in regular for its normalized site attenuation. The test equipment was placed on a wooden table. Sufficient time for the EUT, peripheral equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. Each frequency found during pre-scan measurements was re-examined by manual. The detector function was set to CISPR quasi-peak mode and the bandwidth of the receiver was set to 120 kHz or 1 MHz depending on the frequency of type of signal. The EUT, peripheral equipment and interconnecting cables were re-configured to the set-up producing the max. emission for the frequency and were placed on top of a 0.8-meter high nonmetallic 1 x 1.5 meter table. The EUT, peripheral equipment, and interconnecting cables were re-arranged and manipulated to maximize each emission. The turntable containing the system was rotated; the antenna height was varied 1 to 4 meters and stopped at the azimuth or height producing the maximum emission. Each emission was maximized by: varying the mode of operation to the EUT and/or peripheral equipment and changing the polarity of the antenna, whichever determined the worst-case emission.





Equipment Under Test

EUT Type :

■ Table-Top. □ Floor-Standing.
□ Table-Top and Floor-Standing(Combination).

Operation – mode of the E.U.T. :

The equipment under test was operated during the measurement under following conditions :

□ Standby Mode

■ Operational Condition : ■ Charging + File Up&Down + Play(3.5π / 2.5π)
■ Only Play mode(3.5π / 2.5π)

Configuration of the equipment under test :

Following peripheral devices and interface cables were connected during the measurement :

Equipment	Type	Brand	Serial No.
PPE21	PPE21	IRIVER LIMITED.	N/A
Laptop	NT450R5E	Samsung Electronics	JKKG91HF400689R
Adapter(Laptop)	PA-1400-14	LITE-ON TECHNOLOGY CORPORATION	AD-40195
Micro SD	N/A	SanDisk	N/A
EarPhone(3.5 π)	N/A	IRIVER LIMITED.	N/A
Earphone(2.5 π)	N/A	N/A	N/A

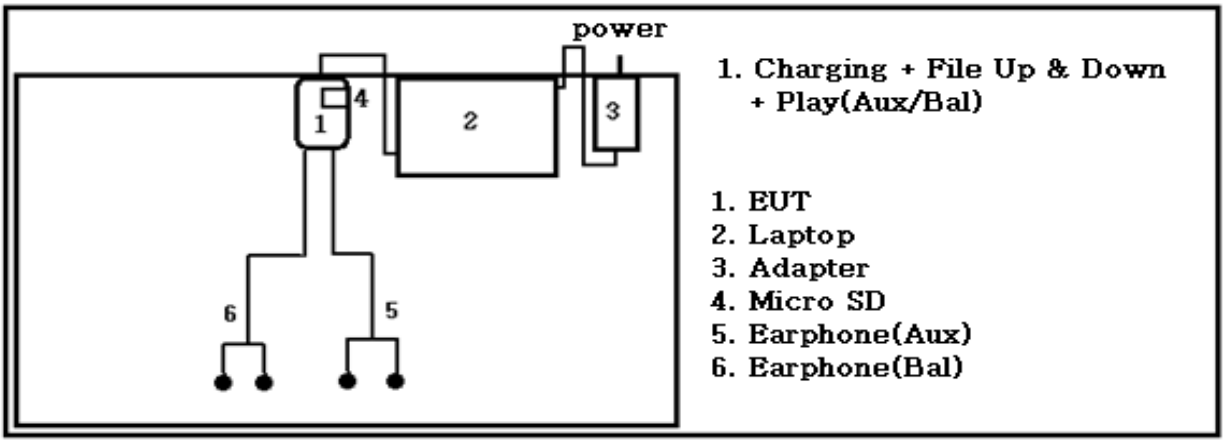
Connecting Interface Cables :

AC Power Cable : 1.0 m (Unshielded)

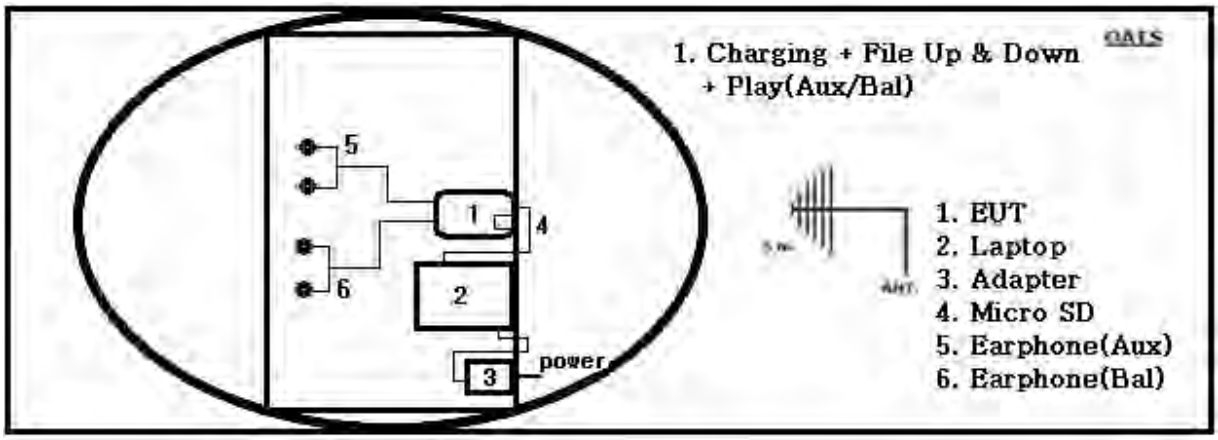
USB Cable(Micro 5pin to USB) : 1.0 m (shielded)

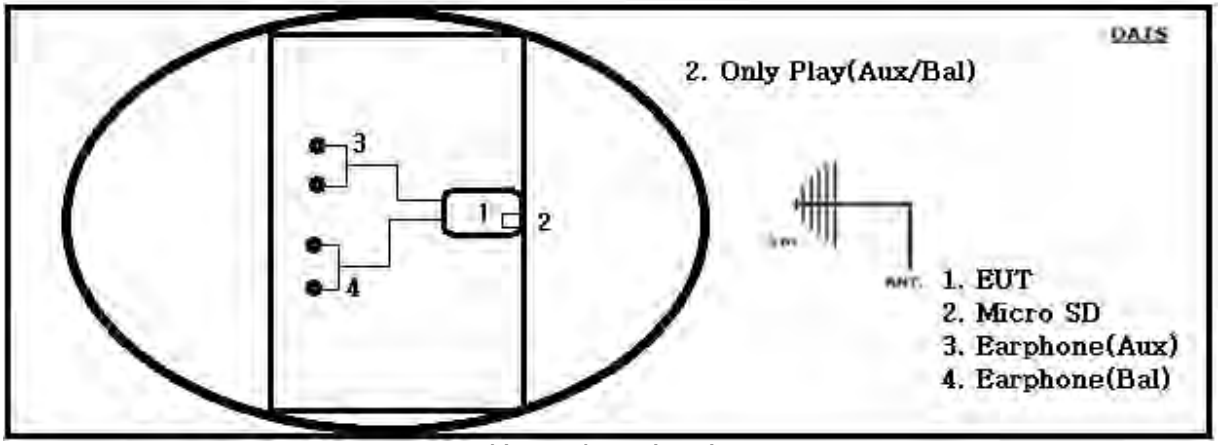
Note : EUT has two Aux port 3.5 π and 2.5 π.
3.5 π Aux port is marked "Aux" and 2.5 π Aux port is marked "Bal" in this report.
(please refer manual. 2.5 π Aux port is written "Balanced port" in manual.)

Test Set-Up



Conducted Emissions





Radiated Emissions

SUMMARY

Emissions

■ Conducted Emission

The requirements are ● MET ○ Not MET
Minimum limit margin 12.68 dB at 0.170 MHz
Maximum limit exceeding
Remarks : Limits are kept with more than 3 dB margin.

■ Radiated Emission

The requirements are ● MET ○ Not MET
Minimum limit margin 4.09 dB at 359.802 MHz
Maximum limit exceeding
Remarks : Limits are kept with more than 3 dB margin.

Sample Calculation

Conducted Emission

Sample Signal Strength Calculation

S(Result) = Measurement + IL + CL
Margin = Limit – S(Result)

S(Result) = Signal Strength
Measurement = Voltage at the Receiver
IL = LISN Insertion Loss
CL = Cable Loss

For example at 15.402 MHz if the measured voltage is 45.35 dBuV, the Cable loss is 0.15 dB, the insertion loss is 0.74 dB, the signal strength would be calculated:

S(Result) = 45.35 + 0.15 + 0.74 = 46.24 dBuV
Margin = 60 dBuV – 46.24 dBuV = 13.76 dB

Radiated Emission

Sample Field Strength Calculation

FS(Result) = Reading + AF + CL
Margin = Limit – FS(Result)

FS(Result) = Field Strength
Reading = Measured Voltage at the Receiver
AF = Antenna Factor
CL = Cable Loss

For example at 240.000 MHz if the measured voltage is 21.70 dBuV with an antenna Distance of 3 meters, the field intensity would be calculated:

Limit[dBuV/m] = 200[uV/m] = 20log(200) = 46.00 dBuV/m

FS(Result) = 21.70 + 10.71 + 2.28 = 34.69 dBuV/m
Margin = 46.00 dBuV/m – 34.69 dBuV/m = 11.31 dB

TEST CONDITIONS AND DATA

Conducted Emissions

[Applicable]

◆ Test Equipment Used

Model Name	Description	Manufacturer	Due for Cal	Serial No.
ESCI	Test Receiver	Rohde & Schwarz	Jul. 16, 2014	100373
ENV216	LISN	Rohde & Schwarz	Dec. 09, 2014	101718

◆ Test Accessories Used

Type	Manufacturer
Aneroid Barometer	Sato
Hygrometer	Sato

◆ Environmental Conditions

Temperature	(24.5 ± 0.2) ℃
Humidity	(52.7 ± 0.2) % R.H.
Atmosphere pressure	1000 mbar

◆ Test Program See the operation mode on page 8

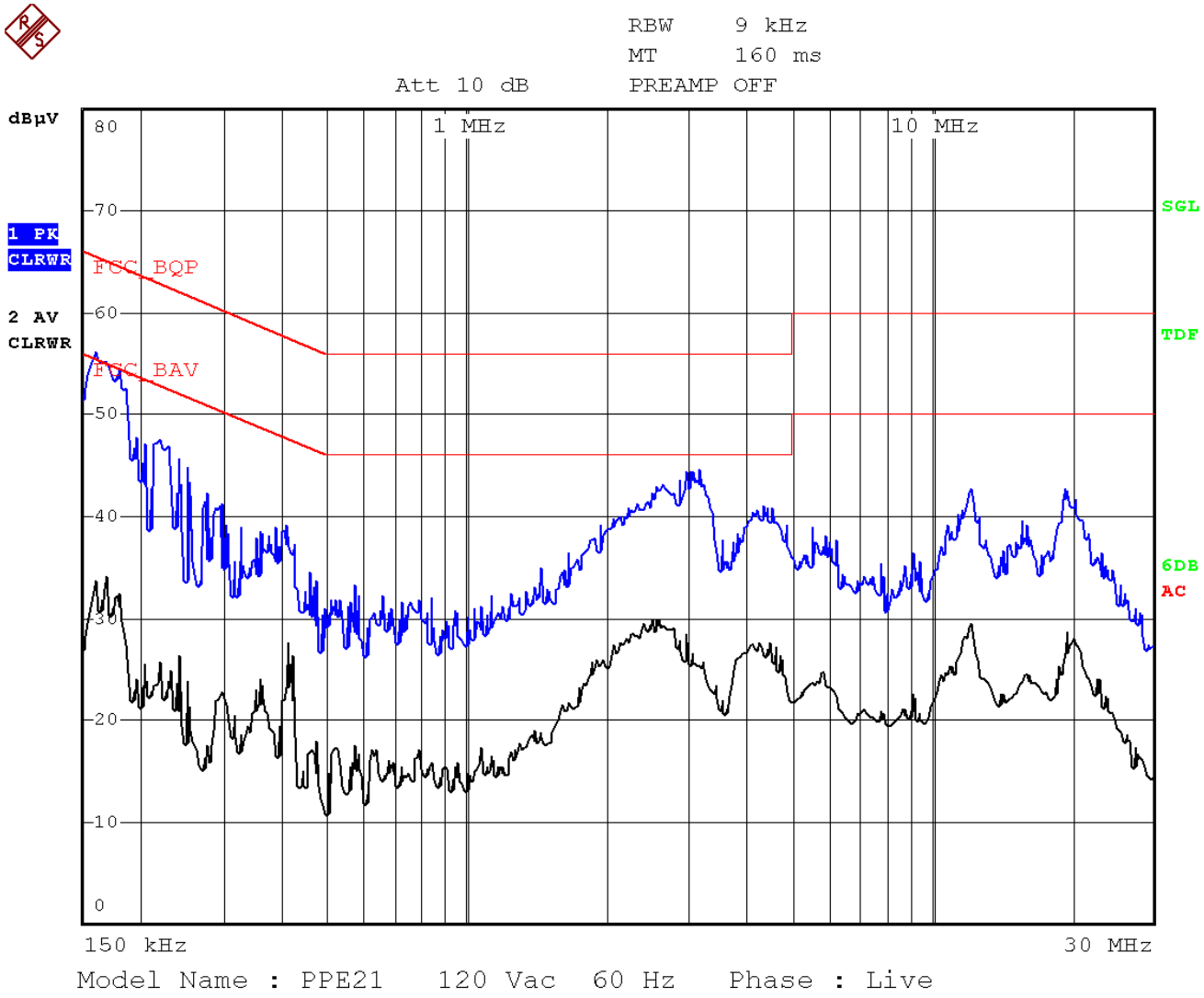
◆ Test Area Conducted Room #1

◆ Test Date June 03, 2014

Note :

Conducted Emissions

1. Charging + File Up & Down + Play(Aux) **Live**



Model Name : PPE21 120 Vac 60 Hz Phase : Live

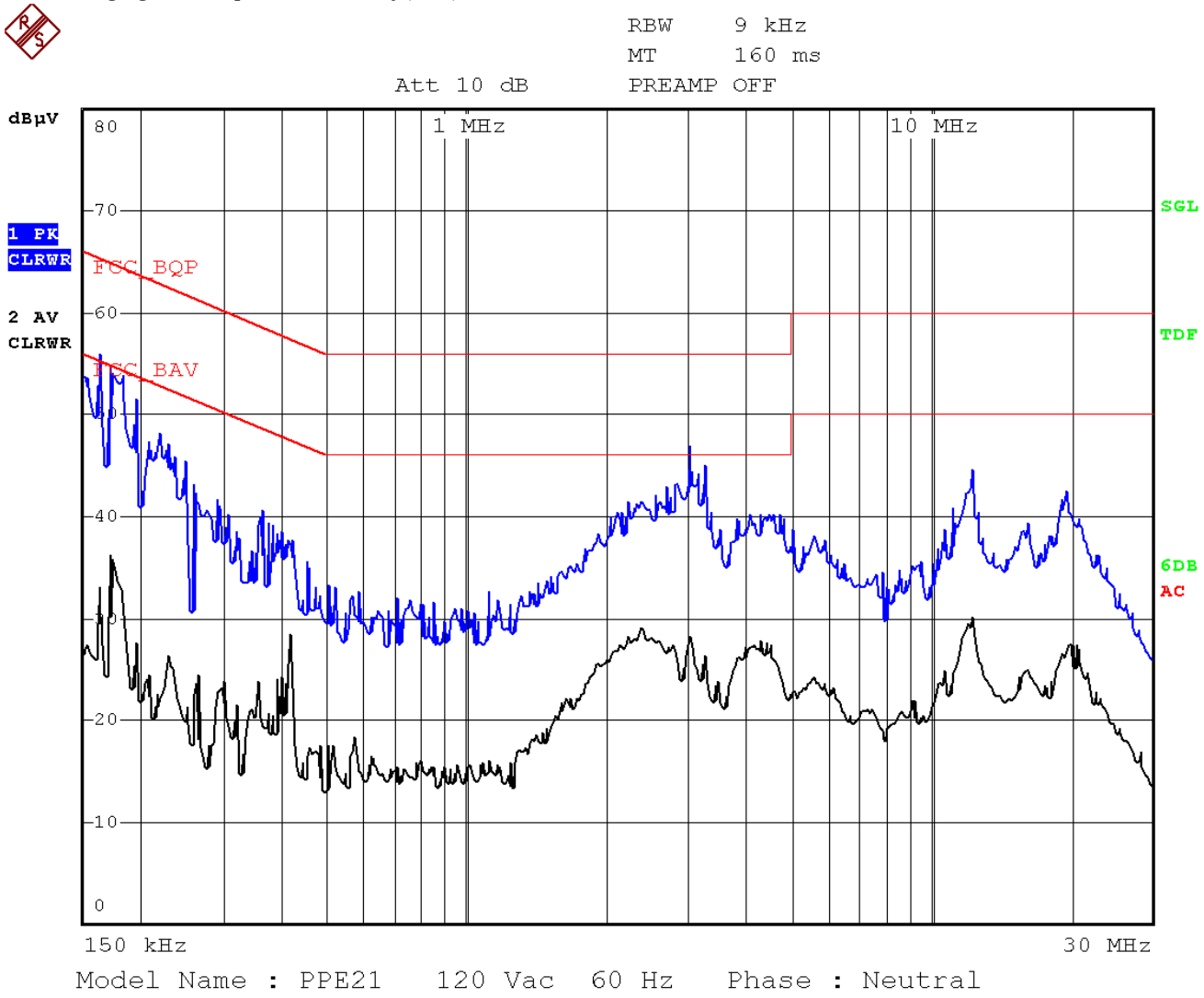
Freq. [MHz]	Measurement [dB µV]		Limit [dB µV]		Insertion Loss	Cable Loss	Result [dB µV]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	[dB]	[dB]	Q-peak	Average	Q-peak	Average
0.170	41.91	25.10	64.96	54.96	9.55	0.04	51.50	34.69	13.46	20.27
0.190	38.27	20.90	64.04	54.04	9.55	0.03	47.85	30.48	16.18	23.55
0.230	33.48	17.42	62.45	52.45	9.55	0.03	43.06	27.00	19.39	25.45
0.250	31.66	18.24	61.76	51.76	9.55	0.04	41.25	27.83	20.51	23.93
2.682	28.45	20.11	56.00	46.00	9.58	0.10	38.13	29.79	17.87	16.21
2.850	29.53	20.77	56.00	46.00	9.58	0.10	39.21	30.45	16.79	15.55

Note *: Charging + File Up & Down + Play(Aux) mode.*

Conducted Emissions

1. Charging + File Up & Down + Play(Aux) mode

Neutral



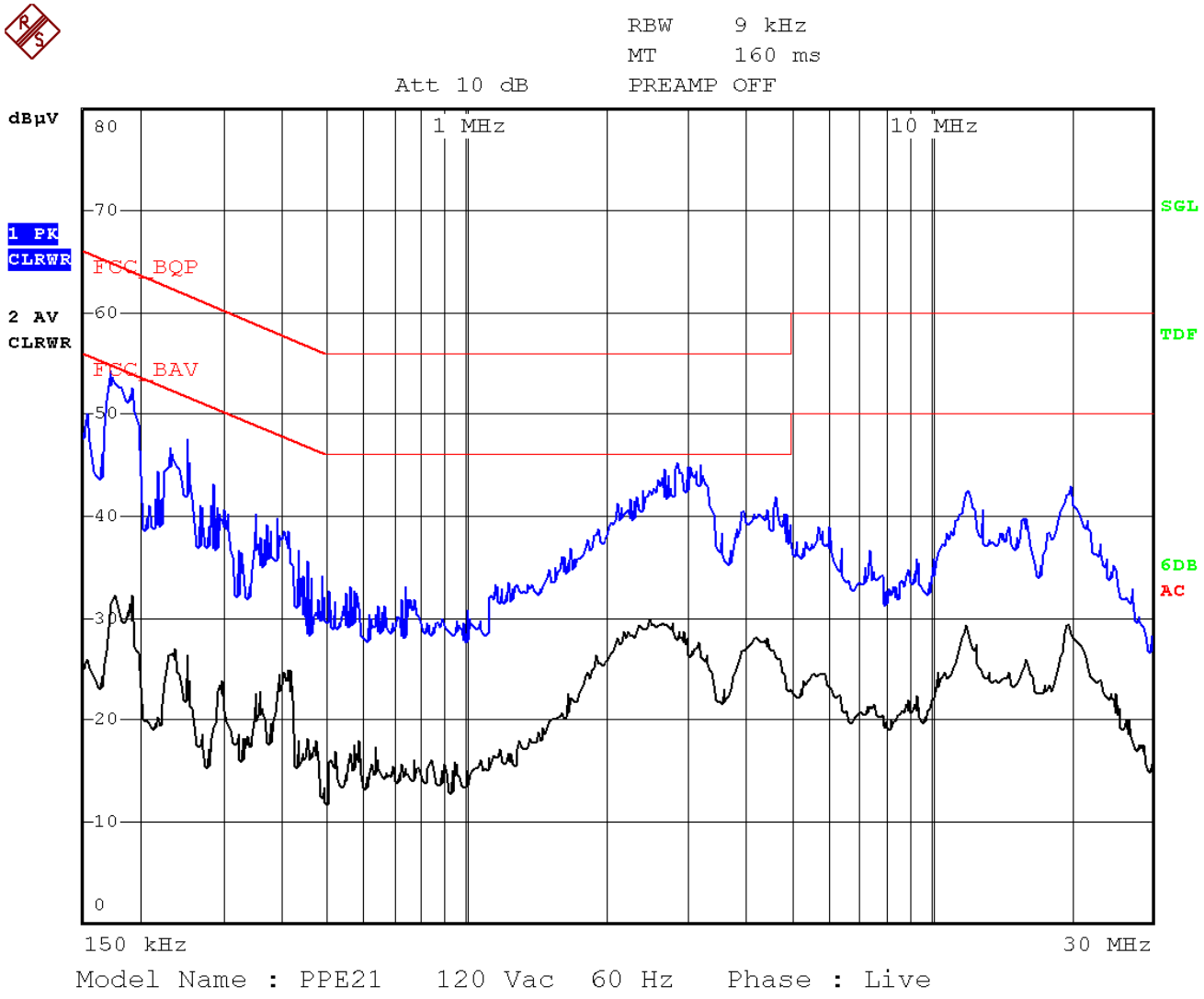
Model Name : PPE21 120 Vac 60 Hz Phase : Neutral

Freq. [MHz]	Measurement [dB µV]		Limit [dB µV]		Insertion Loss	Cable Loss	Result [dB µV]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	[dB]	[dB]	Q-peak	Average	Q-peak	Average
0.158	43.17	27.91	65.57	55.57	9.56	0.05	52.78	37.52	12.79	18.05
0.166	41.68	24.36	65.16	55.16	9.56	0.05	51.29	33.97	13.87	21.19
0.182	36.75	19.31	64.39	54.39	9.56	0.04	46.35	28.91	18.05	25.49
0.230	33.49	18.93	62.45	52.45	9.55	0.03	43.08	28.52	19.37	23.93
2.554	28.35	19.68	56.00	46.00	9.58	0.10	38.03	29.36	17.98	16.65
2.986	27.24	17.80	56.00	46.00	9.58	0.10	36.92	27.48	19.08	18.52

Note *: Charging + File Up & Down + Play(Aux) mode.*

Conducted Emissions

1. Charging + File Up & Down + Play(Bal) mode **Live**



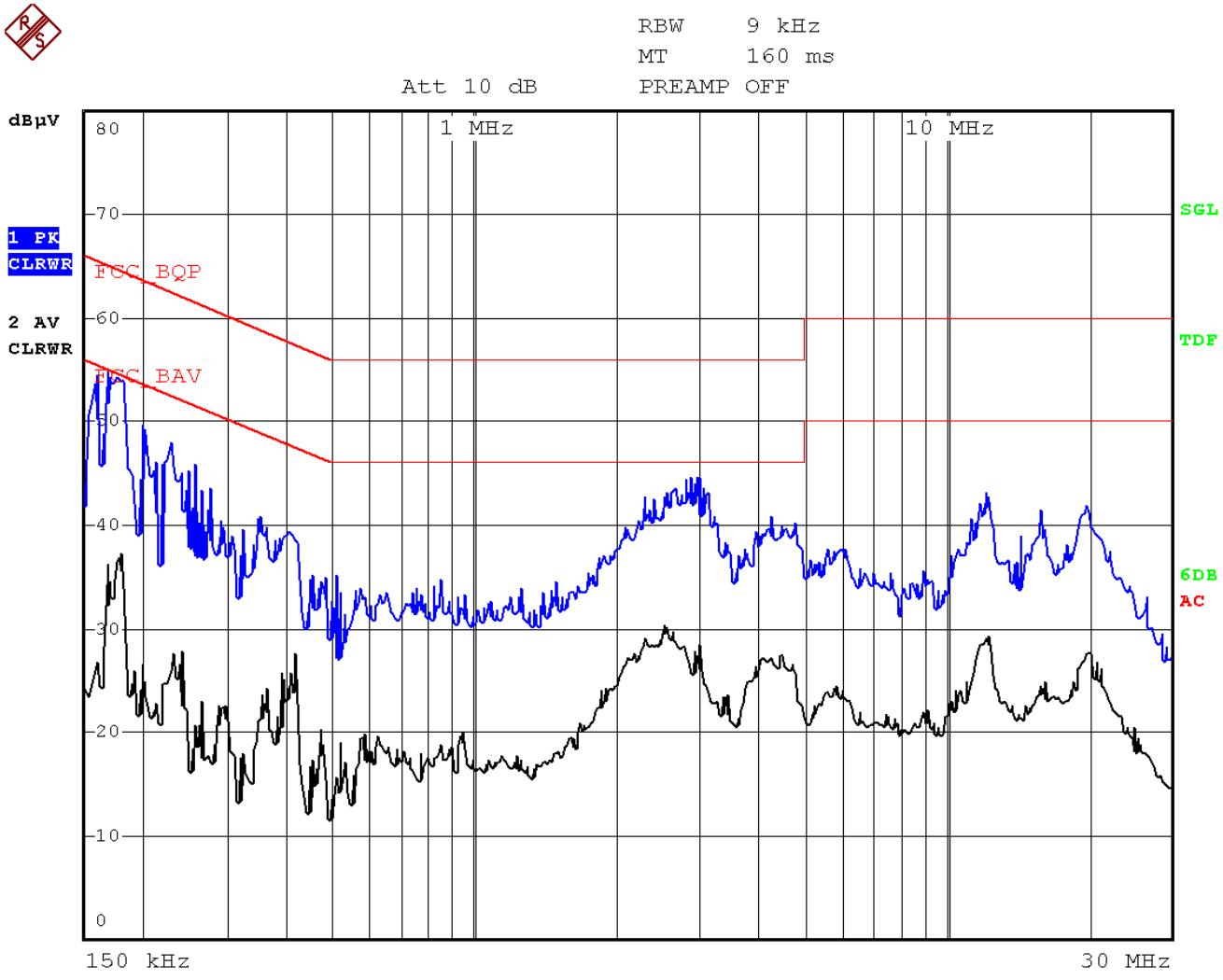
Model Name : PPE21 120 Vac 60 Hz Phase : Live

Freq. [MHz]	Measurement [dB µV]		Limit [dB µV]		Insertion Loss	Cable Loss	Result [dB µV]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	[dB]	[dB]	Q-peak	Average	Q-peak	Average
0.158	40.95	20.77	65.57	55.57	9.55	0.05	50.55	30.37	15.02	25.20
0.178	42.14	26.43	64.58	54.58	9.55	0.04	51.73	36.02	12.85	18.56
0.186	39.99	25.22	64.21	54.21	9.55	0.04	49.58	34.81	14.64	19.41
0.231	33.60	17.28	62.41	52.41	9.55	0.03	43.18	26.86	19.23	25.55
2.638	26.71	19.12	56.00	46.00	9.58	0.10	36.39	28.80	19.61	17.20
2.986	27.08	17.83	56.00	46.00	9.58	0.10	36.76	27.51	19.24	18.49

Note *: Charging + File Up & Down + Play(Bal) mode.*

Conducted Emissions

1. Charging + File Up & Down + Play(Bal) **Neutral**



Model Name : PPE21 120 Vac 60 Hz Phase : Neutral

Freq. [MHz]	Measurement [dB µV]		Limit [dB µV]		Insertion Loss	Cable Loss	Result [dB µV]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	[dB]	[dB]	Q-peak	Average	Q-peak	Average
0.170	42.68	26.21	64.96	54.96	9.56	0.04	52.28	35.81	12.68	19.15
0.190	41.15	25.48	64.04	54.04	9.56	0.03	50.74	35.07	13.29	18.96
0.210	32.46	16.63	63.21	53.21	9.56	0.03	42.05	26.22	21.16	26.99
2.826	29.27	21.10	56.00	46.00	9.58	0.10	38.95	30.78	17.05	15.22
3.146	26.72	16.03	56.00	46.00	9.58	0.12	36.42	25.73	19.58	20.27
3.326	24.65	14.54	56.00	46.00	9.58	0.14	34.37	24.26	21.63	21.74

Note *: Charging + File Up & Down + Play(Bal) mode.*

TEST CONDITIONS AND DATA

Radiated Emission

[Applicable]

◆ Test Equipment Used

Model Name	Description	Manufacture	Due for Cal	Serial No.
ESCS30	Test Receiver	Rohde & Schwarz	May 08, 2015	100171
VULB 9160	Antenna	Schwarzbeck	Jun. 03, 2015	3071
ESCI7	Test Receiver	Rohde & Schwarz	Jul. 16, 2014	100872
SPECTRUM ANALYZER	R3273	ADVANTEST	May. 08, 2015	110600587
8449B OPT H02	Pre Amplifier	HP	Oct. 08, 2014	3008A0530
3115	Horn Ant.	EMCO	Dec. 04, 2015	9012-3602
HF906	Horn Ant.	Rohde & Schwarz	Oct. 25, 2015	100530

◆ Test Accessories Used

Type	Manufacturer
Aneroid Barometer	Sato
Hygrometer	Sato

◆ Environmental Conditions

Temperature	(32.2 ± 1.0) ℃
Humidity	(39.2 ± 0.2) % R.H.
Atmosphere pressure	994 mbar

◆ Test Program See the operational condition page 8.

◆ Test Area Open Site #2, Full-Anechoic Room (3 m)

◆ Test Date June 12, 2014

Note :

Radiated Emissions

Below 1GHz

[Applicable]

1. Charging + File Up & Down + Play(Aux) mode

Freq. [MHz]	Reading [dBuV]	Antenna Factor [dB/m]	Cable Loss [dB]	Polar. [H/V]	Limit [dBuV/m]	Result [dBuV/m]	Margin [dB]
215.272	16.70	9.74	2.53	H	43.50	28.97	-14.53
298.695	18.20	12.89	2.92	H	46.00	34.01	-11.99
344.281	19.50	14.04	3.11	H	46.00	36.65	-9.35
480.083	17.90	17.55	3.66	H	46.00	39.11	-6.89
527.612	18.40	18.50	3.88	H	46.00	40.78	-5.22
576.108	16.80	19.25	4.12	H	46.00	40.17	-5.83

1. Charging + File Up & Down + Play(Bal) mode

Freq. [MHz]	Reading [dBuV]	Antenna Factor [dB/m]	Cable Loss [dB]	Polar. [H/V]	Limit [dBuV/m]	Result [dBuV/m]	Margin [dB]
49.404	17.10	11.89	1.18	V	40.00	30.17	-9.83
215.276	16.30	9.74	2.53	H	43.50	28.57	-14.93
298.691	17.90	12.89	2.92	H	46.00	33.71	-12.29
344.282	19.20	14.04	3.11	H	46.00	36.35	-9.65
359.805	18.40	14.43	3.18	H	46.00	36.01	-9.99
527.613	18.10	18.50	3.88	H	46.00	40.48	-5.52
576.102	16.90	19.25	4.12	V	46.00	40.27	-5.73

Note : Limits Below 1 GHz (3 m method)

2. Only Play(Aux) mode

Freq. [MHz]	Reading [dBuV]	Antenna Factor [dB/m]	Cable Loss [dB]	Polar. [H/V]	Limit [dBuV/m]	Result [dBuV/m]	Margin [dB]
199.751	17.50	9.14	2.45	H	43.50	29.09	-14.41
279.295	15.30	12.21	2.83	H	46.00	30.34	-15.66
320.032	19.60	13.44	3.01	H	46.00	36.05	-9.95
339.434	19.50	13.92	3.09	H	46.00	36.51	-9.49
359.802	24.30	14.43	3.18	H	46.00	41.91	-4.09
559.617	17.40	19.00	4.04	H	46.00	40.44	-5.56

2. Only Play(Bal) mode

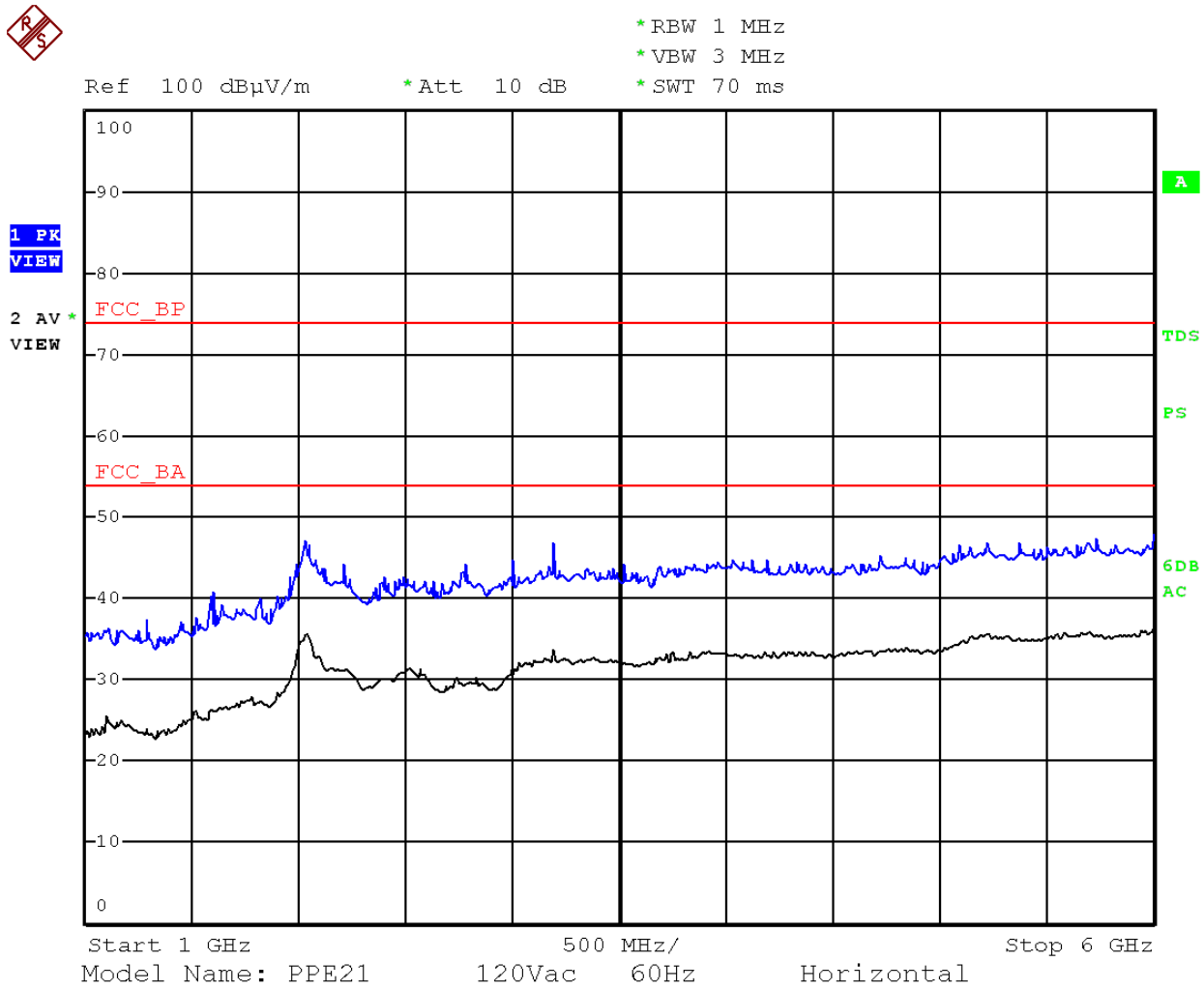
Freq. [MHz]	Reading [dBuV]	Antenna Factor [dB/m]	Cable Loss [dB]	Polar. [H/V]	Limit [dBuV/m]	Result [dBuV/m]	Margin [dB]
31.945	18.60	10.66	0.94	V	40.00	30.20	-9.80
320.031	21.40	13.44	3.01	H	46.00	37.85	-8.15
359.802	22.40	14.43	3.18	H	46.00	40.01	-5.99
559.617	18.20	19.00	4.04	H	46.00	41.24	-4.76
719.668	15.90	20.89	4.56	H	46.00	41.35	-4.65

Note : Limits Below 1 GHz (3 m method)

Radiated Emissions

Above 1GHz

1. Charging + File Up & Down + Play(Aux) mode **Horizontal**



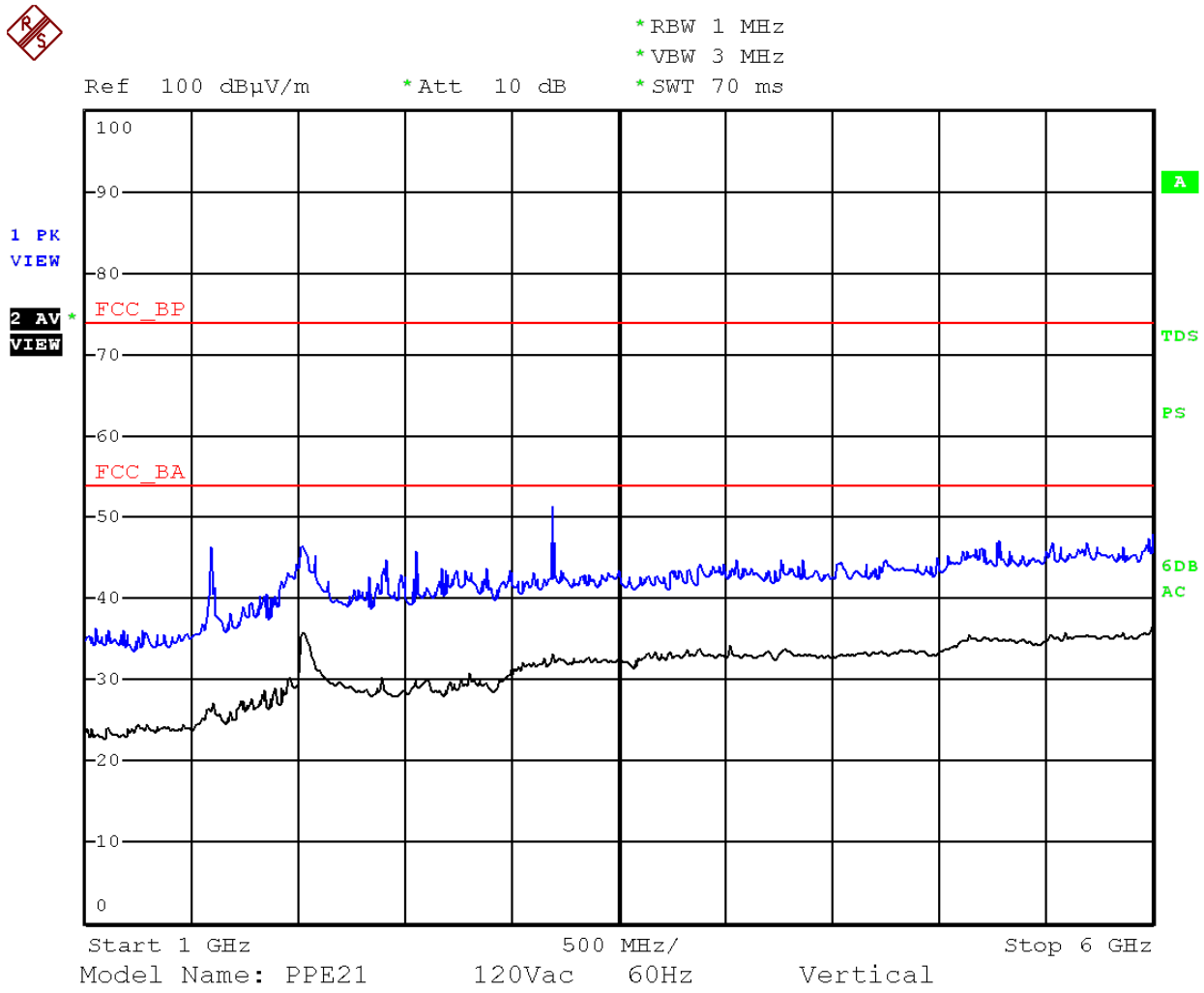
Freq. [GHz]	Reading[dBuV]		Ant. Height [cm]	Limit[dBuV/m]		Margin [dB]	
	Peak	Average		Peak	Average	Peak	Average
1.294	37.35	23.90	100	74.00	54.00	36.65	30.10
2.035	47.12	35.52	100	74.00	54.00	26.88	18.48
2.783	44.28	29.45	100	74.00	54.00	29.72	24.55
3.193	46.85	33.84	100	74.00	54.00	27.15	20.16
5.221	46.93	35.62	100	74.00	54.00	27.07	18.38
5.735	47.40	35.46	100	74.00	54.00	26.60	18.54

Note : Reading measurement is included Loss factors.

Radiated Emissions

Above 1GHz

1. Charging + File Up & Down + Play(Aux) mode **Vertical**



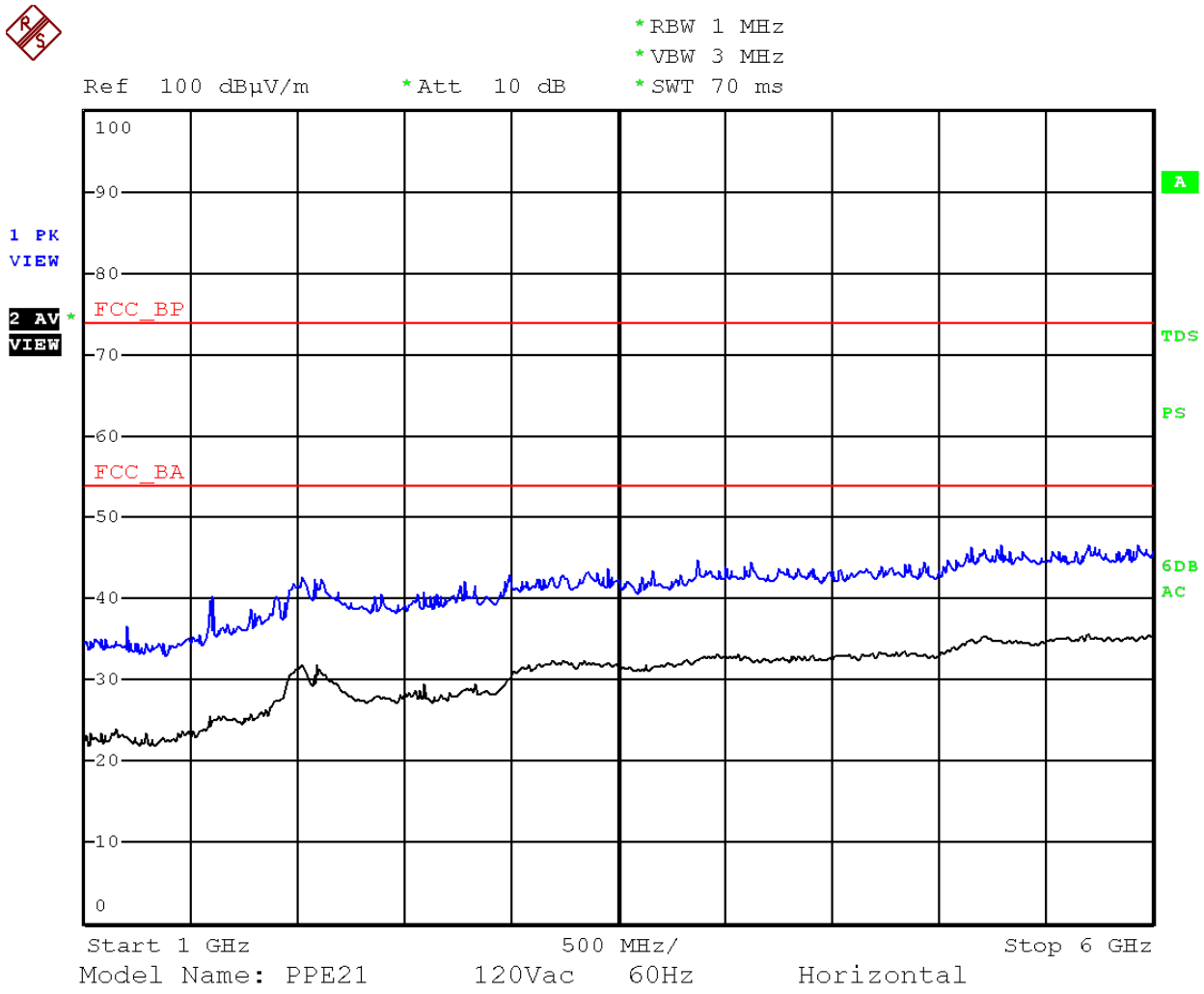
Freq. [GHz]	Reading[dBuV]		Ant. Height [cm]	Limit[dBuV/m]		Margin [dB]	
	Peak	Average		Peak	Average	Peak	Average
1.593	46.33	26.24	100	74.00	54.00	27.67	27.76
2.021	46.22	35.92	100	74.00	54.00	27.78	18.08
2.412	44.88	28.59	100	74.00	54.00	29.12	25.41
2.556	45.72	30.01	100	74.00	54.00	28.28	23.99
3.194	51.18	33.09	100	74.00	54.00	22.82	20.91
5.281	47.23	34.84	100	74.00	54.00	26.77	19.16

Note : Reading measurement is included Loss factors.

Radiated Emissions

Above 1GHz

1. Charging + File Up & Down Play(Bal) mode **Horizontal**



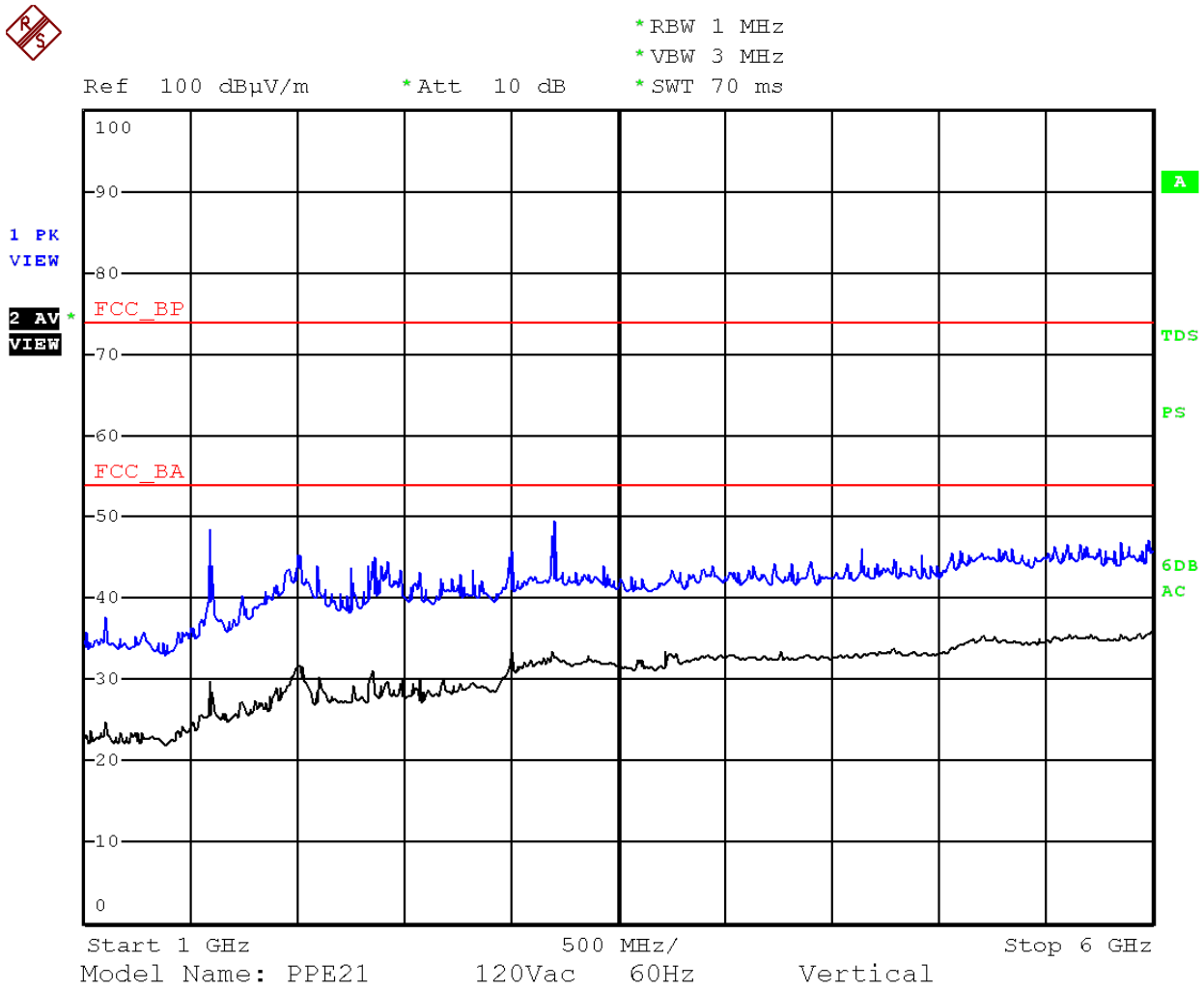
Freq. [GHz]	Reading[dBuV]		Ant. Height [cm]	Limit[dBuV/m]		Margin [dB]	
	Peak	Average		Peak	Average	Peak	Average
1.201	36.57	23.51	100	74.00	54.00	37.43	30.49
1.603	40.25	24.97	100	74.00	54.00	33.75	29.03
2.026	42.66	31.94	100	74.00	54.00	31.34	22.06
2.092	41.95	31.92	100	74.00	54.00	32.05	22.08
3.876	44.78	32.33	100	74.00	54.00	29.22	21.67
5.153	46.38	34.93	100	74.00	54.00	27.62	19.07

Note : Reading measurement is included Loss factors.

Radiated Emissions

Above 1GHz

1. Charging + File Up & Down + Play(Bal) mode **Vertical**



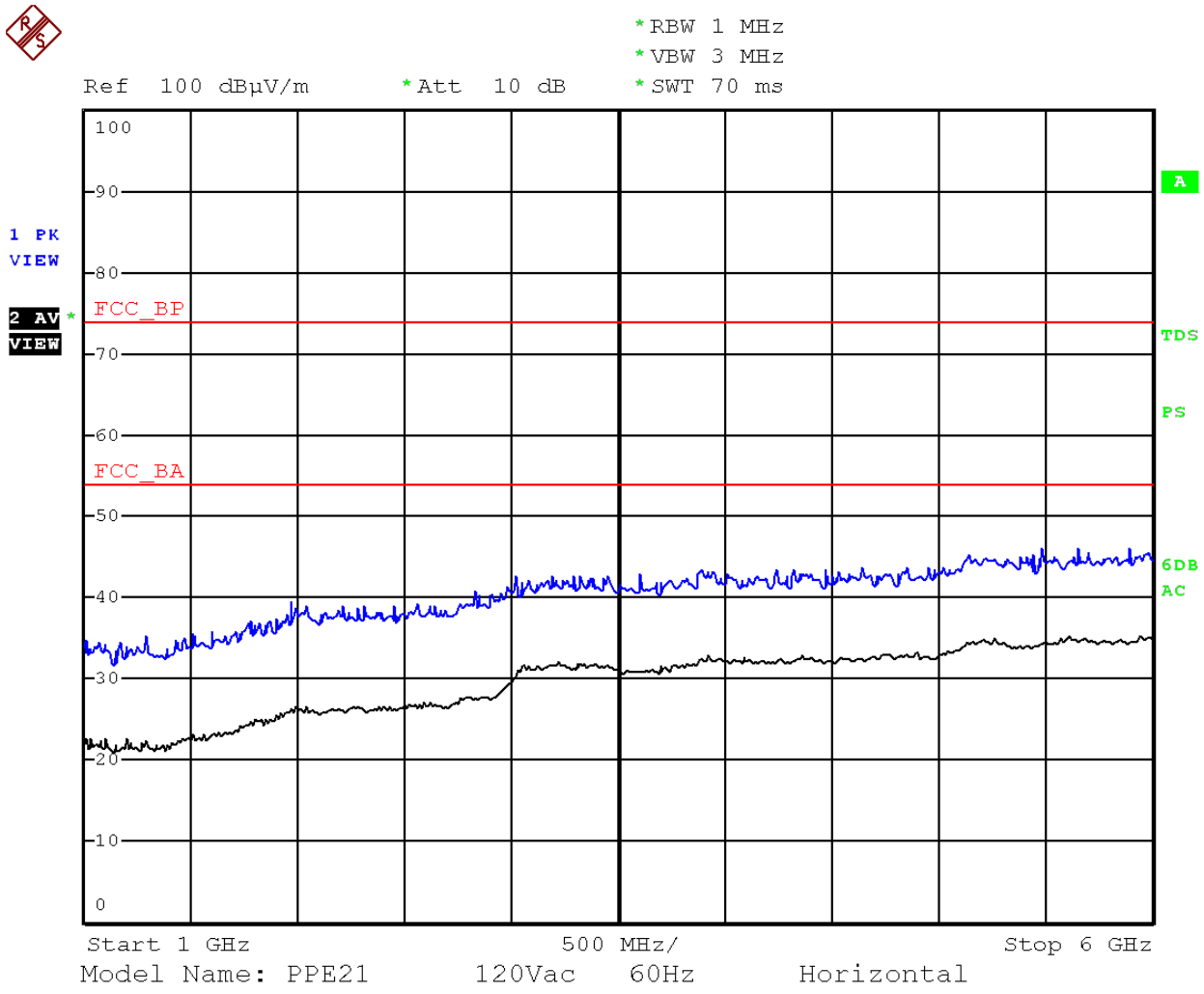
Freq. [GHz]	Reading[dBuV]		Ant. Height [cm]	Limit[dBuV/m]		Margin [dB]	
	Peak	Average		Peak	Average	Peak	Average
1.103	37.70	24.68	100	74.00	54.00	36.30	29.32
1.594	48.42	29.80	100	74.00	54.00	25.58	24.20
2.003	45.35	31.61	100	74.00	54.00	28.65	22.39
2.361	44.91	30.38	100	74.00	54.00	29.09	23.62
3.008	45.71	33.45	100	74.00	54.00	28.29	20.55
3.202	49.56	32.67	100	74.00	54.00	24.44	21.33

Note : Reading measurement is included Loss factors.

Radiated Emissions

Above 1GHz

2. Only Play(Aux) mode **Horizontal**



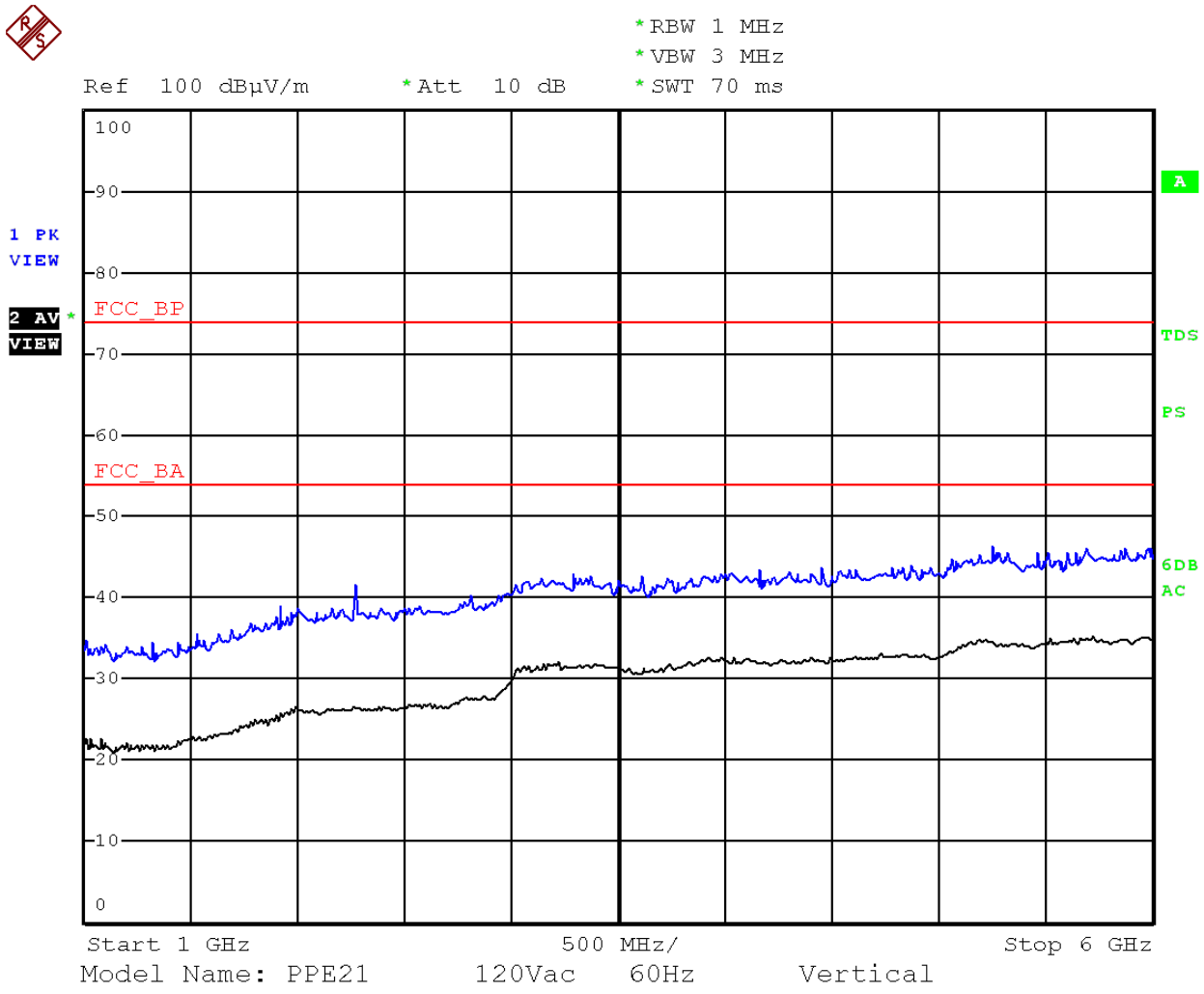
Freq. [GHz]	Reading[dBuV]		Ant. Height [cm]	Limit[dBuV/m]		Margin [dB]	
	Peak	Average		Peak	Average	Peak	Average
1.292	35.31	22.34	100	74.00	54.00	38.69	31.66
1.974	39.48	26.49	100	74.00	54.00	34.52	27.51
3.021	42.56	30.38	100	74.00	54.00	31.44	23.62
3.892	43.31	32.35	100	74.00	54.00	30.69	21.65
5.141	45.37	34.27	100	74.00	54.00	28.63	19.73
5.482	46.02	34.17	100	74.00	54.00	27.98	19.83

Note : Reading measurement is included Loss factors.

Radiated Emissions

Above 1GHz

2. Only Play(Aux) mode **Vertical**



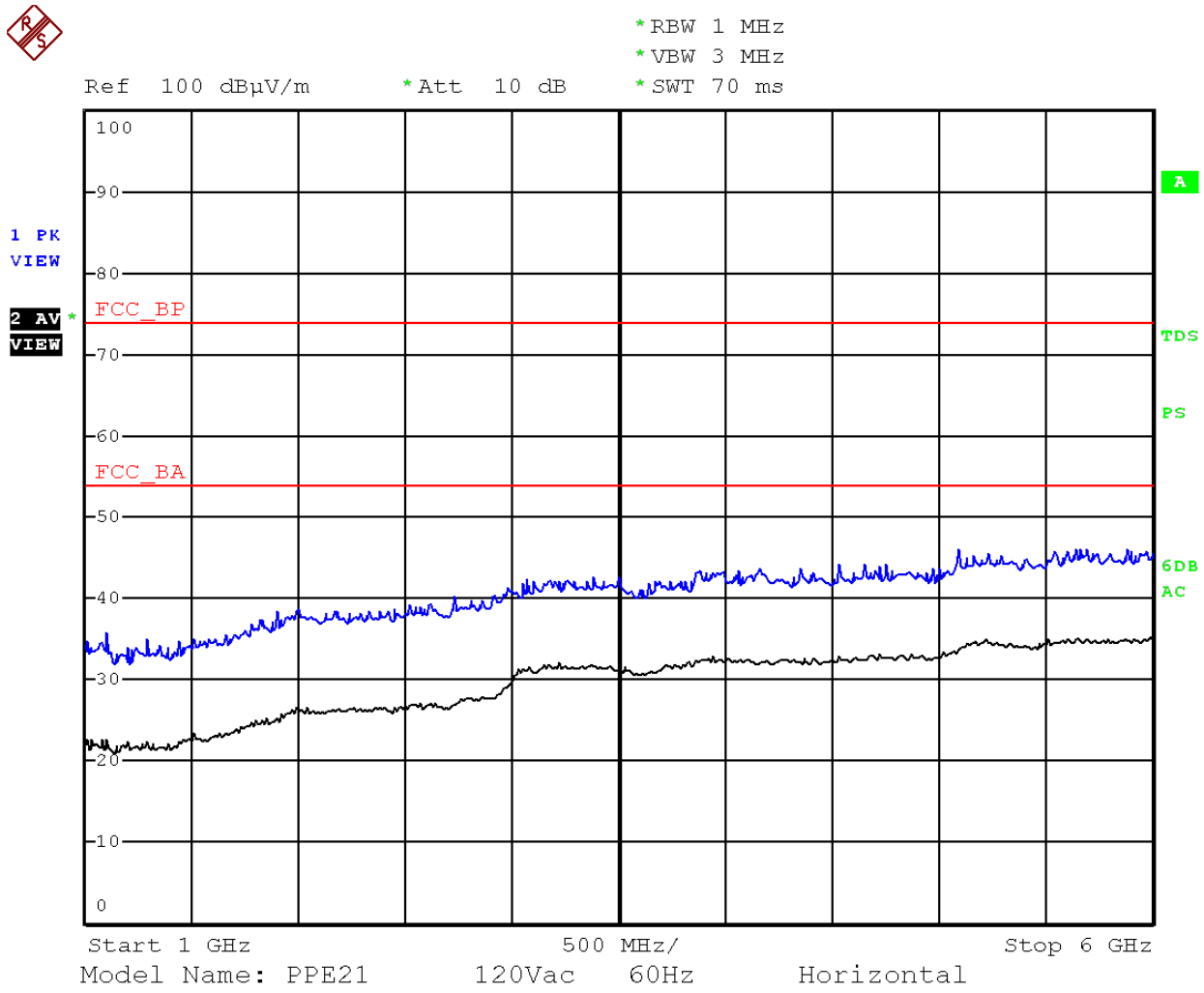
Freq. [GHz]	Reading[dBuV]		Ant. Height [cm]	Limit[dBuV/m]		Margin [dB]	
	Peak	Average		Peak	Average	Peak	Average
1.321	34.42	21.92	100	74.00	54.00	39.58	32.08
1.925	39.06	25.80	100	74.00	54.00	34.94	28.20
2.273	41.52	26.30	100	74.00	54.00	32.48	27.70
3.291	42.97	31.42	100	74.00	54.00	31.03	22.58
5.253	46.24	34.41	100	74.00	54.00	27.76	19.59
5.692	46.01	35.03	100	74.00	54.00	27.99	18.97

Note : Reading measurement is included Loss factors.

Radiated Emissions

Above 1GHz

2. Only Play(Bal) mode **Horizontal**



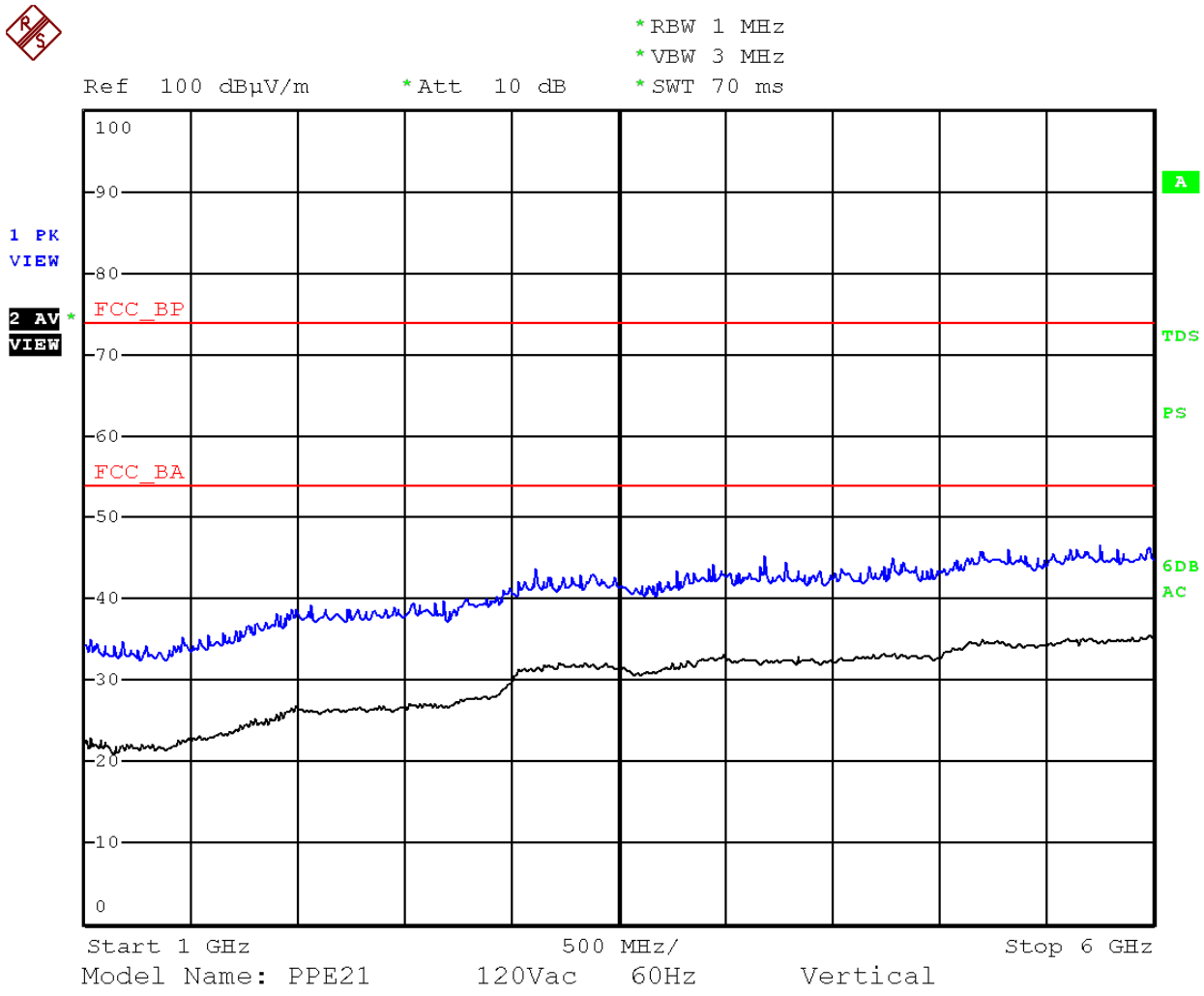
Freq. [GHz]	Reading[dBuV]		Ant. Height [cm]	Limit[dBuV/m]		Margin [dB]	
	Peak	Average		Peak	Average	Peak	Average
1.102	35.74	22.61	100	74.00	54.00	38.26	31.39
2.731	40.23	27.03	100	74.00	54.00	33.77	26.97
3.074	42.37	31.21	100	74.00	54.00	31.63	22.79
4.162	43.75	32.17	100	74.00	54.00	30.25	21.83
4.536	44.28	32.88	100	74.00	54.00	29.72	21.12
5.091	46.03	33.61	100	74.00	54.00	27.97	20.39

Note : Reading measurement is included Loss factors.

Radiated Emissions

Above 1GHz

2. Only Play(Bal) mode **Vertical**



Freq. [GHz]	Reading[dBuV]		Ant. Height [cm]	Limit[dBuV/m]		Margin [dB]	
	Peak	Average		Peak	Average	Peak	Average
1.032	35.09	22.86	100	74.00	54.00	38.91	31.14
2.061	39.26	26.52	100	74.00	54.00	34.74	27.48
3.115	43.68	31.39	100	74.00	54.00	30.32	22.61
4.183	45.20	32.35	100	74.00	54.00	28.80	21.65
5.205	45.78	34.99	100	74.00	54.00	28.22	19.01
5.753	46.50	34.74	100	74.00	54.00	27.50	19.26

Note : Reading measurement is included Loss factors.

Appendix A. Test Setup Photos

1. Charging + File Up & Down + Play(Aux/Bal) mode

Conducted Emissions – Front View

Conducted Emissions – Rear View

Appendix A. Test Setup Photos

1. Charging + File Up & Down + Play(Aux/Bal) mode

Radiated Emissions below 1 GHz – Front View

Radiated Emissions below 1 GHz – Rear View

2. Only Play(Aux/Bal) mode

Radiated Emissions below 1 GHz – Front View

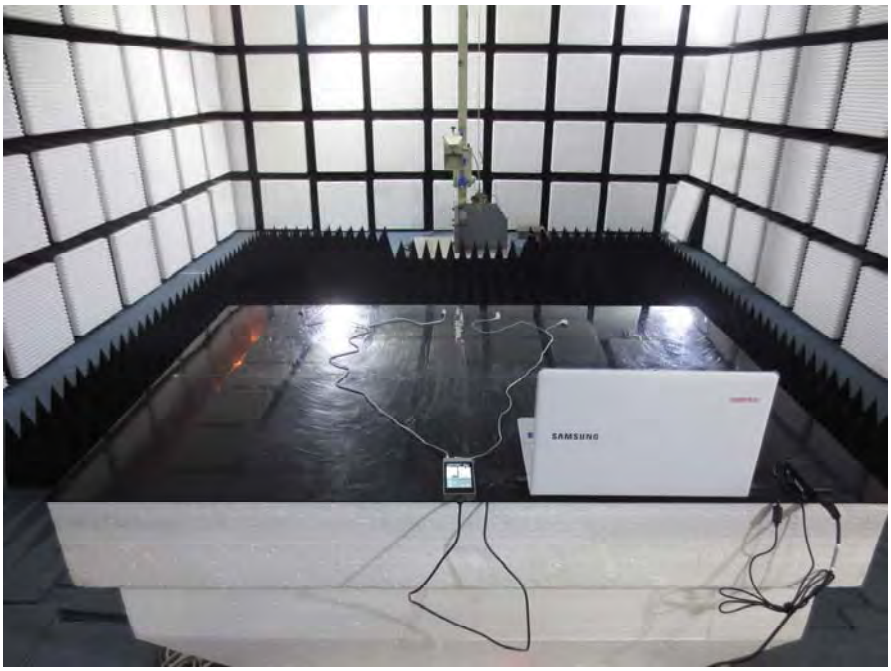
Radiated Emissions below 1 GHz – Rear View

Appendix A. Test Setup Photos

1. Charging + File Up & Down + Play(Aux/Bal) mode

Radiated Emissions Above 1 GHz – Front View

Radiated Emissions Above 1 GHz – Rear View



2. Only Play(Aux/Bal) mode

Radiated Emissions Above 1 GHz – Front View

Radiated Emissions Above 1 GHz – Rear View