



EMC TEST REPORT

Applicant Nokia ShangHai Bell Co., Ltd.
FCC ID 2ADZRG2426GB
Product Nokia ONT
Brand NOKIA
Model G-2426G-B
Report No. R2103A0256-E1
Issue Date June 15, 2021

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC Code CFR47 Part15B (2020)/ 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.

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Summary of measurement results

Number	Test Case	Clause in FCC Rules	Conclusion
1	Radiated Emission	FCC Part15.109, ANSI C63.4-2014	PASS
2	Conducted Emission	FCC Part15.107, ANSI C63.4-2014	PASS
Date of Testing: April 15, 2021 ~ April 22, 2021			
Date of Sample Received: March 17, 2021			
Note: All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			

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.

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 measurements.

A2LA (Certificate Number: 3857.01)

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

1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China
City: Shanghai
Post code: 201201
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Website: <http://www.ta-shanghai.com>
E-mail: fanguangchang@ta-shanghai.com

2 General Description of Equipment under Test

2.1 Applicant and Manufacturer Information

Applicant	Nokia ShangHai Bell Co., Ltd.
Applicant address	No.388 Ningqiao Road, Pudong Jinqiao, Shanghai, 201206 CHINA
Manufacturer	Nokia ShangHai Bell Co., Ltd.
Manufacturer address	No.388 Ningqiao Road, Pudong Jinqiao, Shanghai, 201206 CHINA

2.2 General information

EUT Description			
Model	G-2426G-B		
IMEI	ALCLB3FC2AEA		
HW Version	PEM2		
SW Version	Null		
Antenna Type	PCB Antenna		
Frequency	Band	Tx (MHz)	Rx (MHz)
	Wi-Fi 2.4G	2400 ~ 2483.5	2400 ~ 2483.5
	Wi-Fi 5G(U-NII-1)	5150 ~ 5250	5150 ~ 5250
	Wi-Fi 5G(U-NII-2A)	5250 ~ 5350	5250 ~ 5350
	Wi-Fi 5G(U-NII-2C)	5470 ~ 5725	5470 ~ 5725
	Wi-Fi 5G(U-NII-3)	5725 ~ 5850	5725 ~ 5850
EUT Accessory			
Adapter 1	Manufacturer: SHENZHEN HONOR ELECTRONIC CO.,LTD Model: ADS-40FKJ-12 12036EPCU/9040108111201202R		
Adapter 2	Manufacturer: SHENZHEN HONOR ELECTRONIC CO.,LTD Model: ADS-40FKJ-12 12036EPCU/9040108111201201R		
Adapter 3	Manufacturer: FUHUA ELECTRONIC CO., LTD Model: UES36WU-120300SPA/UE191205GWZF2RI		
Adapter 4	Manufacturer: FUHUA ELECTRONIC CO., LTD Model: UES36WU-120300SPA/UE201222GWZF2RI		
UPS 1	Manufacturer: CYBER POWER SYSTEMS INC Model: DTC36U12V3-G		
UPS 2	Manufacturer: PowerTec Solutions International Model: PS36L-P7		



Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.

2. There are more than one Adapter and UPS, each one should be applied throughout the compliance test respectively, however, only the worst case UPS 2 will be recorded in this report.

Item	Configure 1	Configure 2
PCB	Generic (DC Jack)	NAR (Molex)
Other	The same	The same

Note: Customer declaration, two configures is the same, except for DC Power connector. There are more than one Configure, each one should be applied throughout the compliance test respectively, however, only the worst case (Configure 2) will be recorded in this report.

Information of Configuration:

No.	Name	Model/Code No.	Edition	Serial No. or Quantity
1	EMA-G-2426G-B NAR	3FE49509AAXX	PEM2	1pc
2	EMA-G-2426G-B	3FE49509ABXX	PEM2	1pc
3	Power adapter	FUHUA: UES36WU-120300SPA/UE201222GWZF2RI	A/0	1pc
4	Power adapter	FUHUA: UES36WU-120300SPA/UE191205GWZF2RI	A/0	1pc
5	Power adapter	HONOR: ADS-40FKJ-12N 12036EPCU/9040108111201201R	A/0	1pc
6	Power adapter	HONOR: ADS-40FKJ-12N 12036EPCU/9040108111201202R	A/0	1pc
7	Power adapter	CyberPower: DTC36U12V3-G	--	1pc
8	Power adapter	PSI: PS36L-P7	--	1pc

Note: X can be replaced by alphanumeric characters A-Z/0-9 or blank.



Mnemonic	Kit Code	EMA Code	Part Description	Power Adapter	
G-242 6G-B	3FE4944 1AAXX	3FE4950 9AAXX	G-2426G-B, GPON ONT, NAR, US Plug, 1xUSB, 2xPOTS, 4xGE, 4x4 2.4G Wi-Fi 6, 4x4 5G Wi-Fi 6.	UES36WU-120300SPA/ UE201222GWZF2RI	ADS-40FKJ-12N 12036EPCU/904010 8111201201R
				DTC36U12V3-G	PS36L-P7
G-242 6G-B	3FE4944 1ABXX	3FE4950 9ABXX	G-2426G-B, GPON ONT, US Plug, 1xUSB, 2xPOTS, 4xGE, 4x4 2.4G Wi-Fi 6, 4x4 5G Wi-Fi 6.	UES36WU-120300SPA/ UE191205GWZF2RI	ADS-40FKJ-12N 12036EPCU/904010 8111201202R

Note: X can be replaced by alphanumeric characters A-Z/0-9 or blank.

Auxiliary equipment details

No.	Name	Brand name	Model	NSB code	Valid Until
1	BIGTAO	Xinertel	N.A	-	No Cal. Required
2	Mini-OLT	Nokia	N.A	-	No Cal. Required
3	PC	Thinkpad	N.A	-	No Cal. Required

Information of Ports

No.	Port name	Number	Shielded or unshielded	Cable type (optic, twisted pair, etc.)	Max. Cable length
1	POWER	1	Unshielded	Power cord	1.2m
2	POTS	1	Unshielded	RJ11 twisted pair	1.5m
3	LAN	4	Unshielded	RJ45 twisted pair	100m
4	GPON	1	Unshielded	Optic fiber	10Km

2.3 Applied Standards

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

Test standards

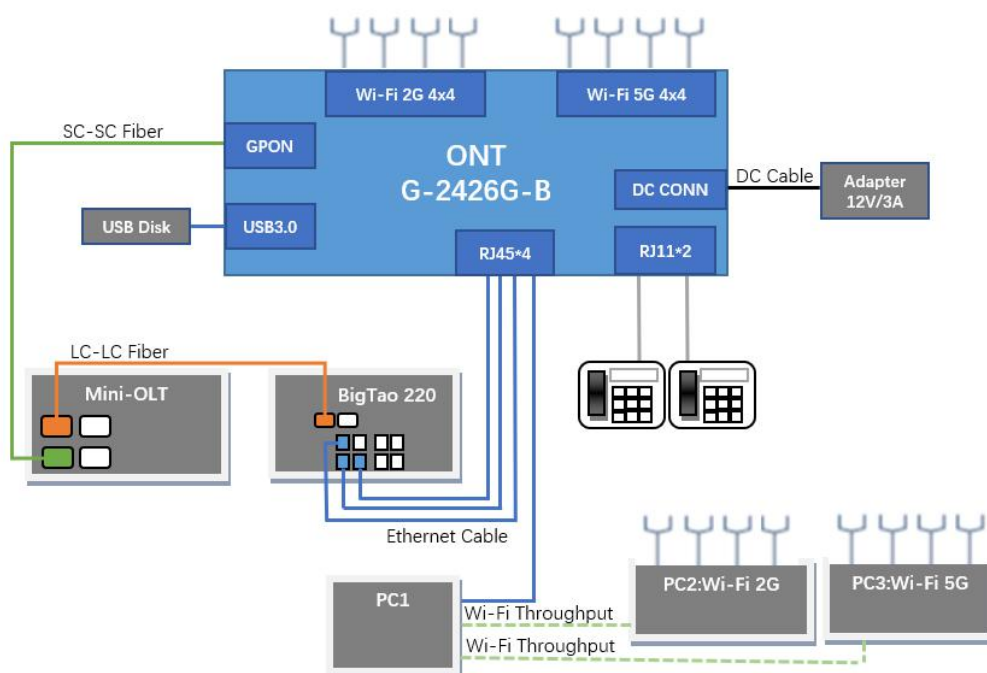
FCC Code CFR47 Part15B (2020)

ANSI C63.4 (2014)

2.4 Test Mode

Description: The G-2426G-B is a GPON ONT which has 1x GPON port, 4x GE ports, 2x POTS, 1x USB, supports 4x4 2.4G Wi-Fi 6 and 4x4 5G Wi-Fi 6.

The G-2426G-B basic functional test in normal room conditions consists of GPON-LAN traffic test, POTS connection test, Wi-Fi connection test, and USB read/write test. GPON linked with Mini-OLT, and traffic downstream should up to 1Gbps. GE ports linked with BigTao in 1000Mbps mode, and the traffic upstream each line should up to 300Mbps. Traffic frame loss ratio less than 10⁻⁷. Wi-Fi connection, POTS connection test should not be broken during and after test.



3 Test Case Results

3.1 Radiated Emission

Ambient condition

Temperature	Relative humidity	Pressure
23°C~26°C	45%~50%	101.5kPa

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:

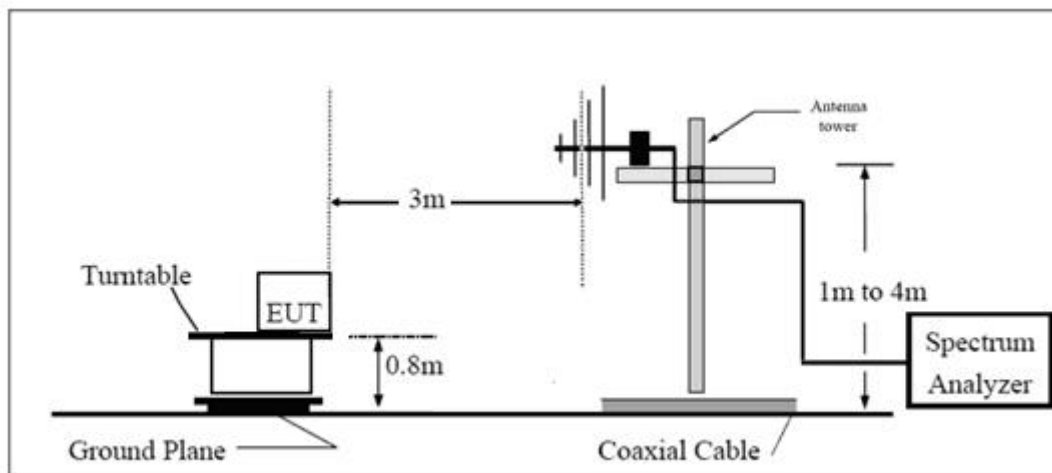
(a) PEAK Detector: RBW=1MHz / VBW=3MHz/ Sweep=AUTO

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

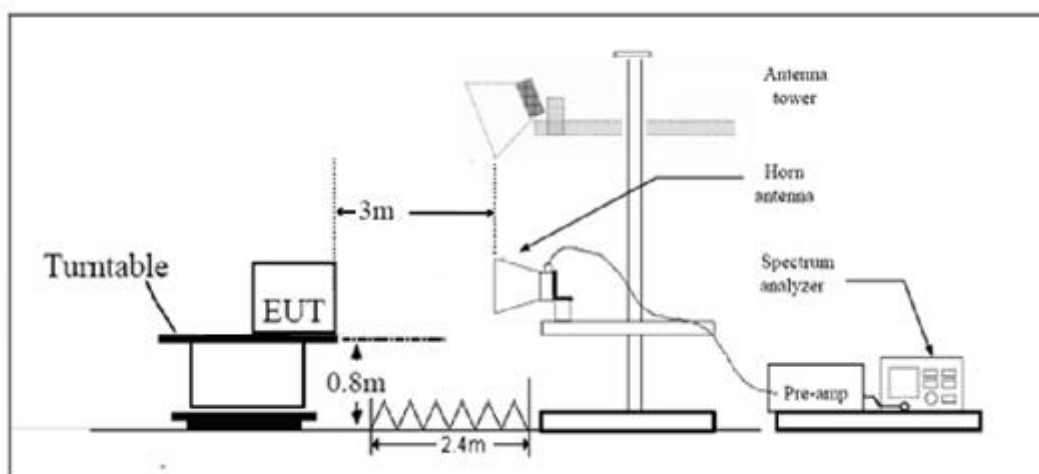
The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

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

Class B

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 $k = 1.96$.

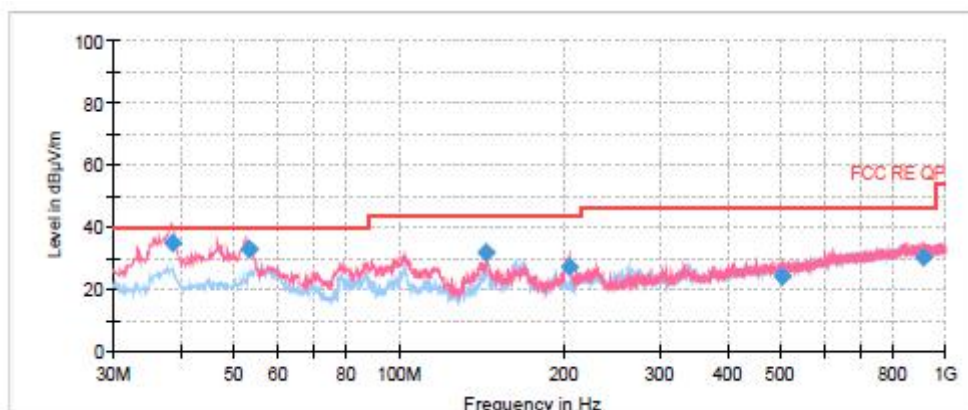
Frequency	Uncertainty
30MHz~200MHz	4.17 dB
200MHz~1000MHz	4.84 dB
1GHz~18GHz	4.35 dB

Test Results

Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier, the Emissions in the frequency band 18GHz –40GHz is more than 20dB below the limit are not reported.

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.

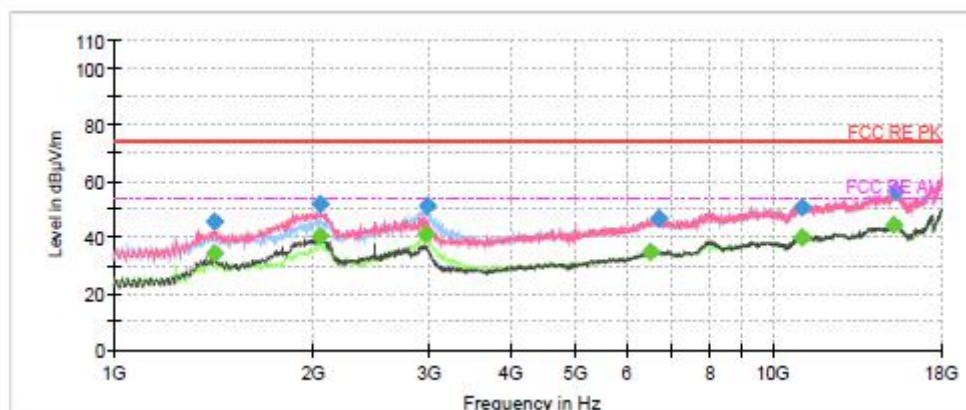


Radiated Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
38.446250	35.07	100.0	V	251.0	13.3	4.93	40.00
53.286250	32.99	100.0	V	206.0	13.4	7.01	40.00
144.102500	31.57	100.0	V	216.0	9.0	11.93	43.50
204.757500	27.03	100.0	V	202.0	11.2	16.47	43.50
502.352500	24.21	180.0	V	22.0	19.6	21.79	46.00
913.262500	30.36	125.0	V	116.0	25.1	15.64	46.00

Remark: 1. Correction Factor = Antenna factor + Insertion loss(cable loss+amplifier gain)

2. Margin = Limit – Quasi-Peak



Radiated Emission from 1GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1419.690000	45.87	---	74.00	28.13	100.0	V	93.0	-19.3
1420.577500	---	34.37	54.00	19.63	100.0	V	93.0	-19.3
2052.303750	---	40.62	54.00	13.38	100.0	V	150.0	-17.9
2054.637500	51.69	---	74.00	22.31	100.0	V	150.0	-17.9
2969.622500	---	41.08	54.00	12.92	100.0	H	122.0	-15.9
2987.075000	51.10	---	74.00	22.90	100.0	H	122.0	-15.8
6500.801250	---	35.19	54.00	18.81	100.0	H	11.0	-3.7
6701.141250	46.69	---	74.00	27.31	100.0	H	150.0	-3.5
11025.651250	51.05	---	74.00	22.95	100.0	V	280.0	0.2
11066.235000	---	39.99	54.00	14.01	200.0	H	306.0	0.4
15231.880000	---	44.73	54.00	9.27	200.0	H	268.0	5.4
15353.150000	56.63	---	74.00	17.37	100.0	H	46.0	5.8

3.2 Conducted Emission

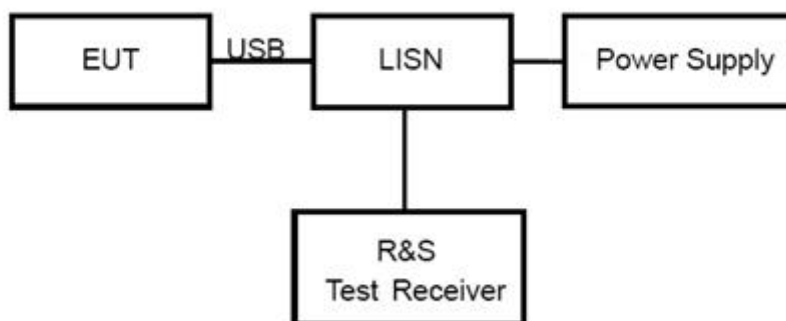
Ambient condition

Temperature	Relative humidity	Pressure
23°C~26°C	45%~50%	101.5kPa

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.

Test Setup



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

Limits

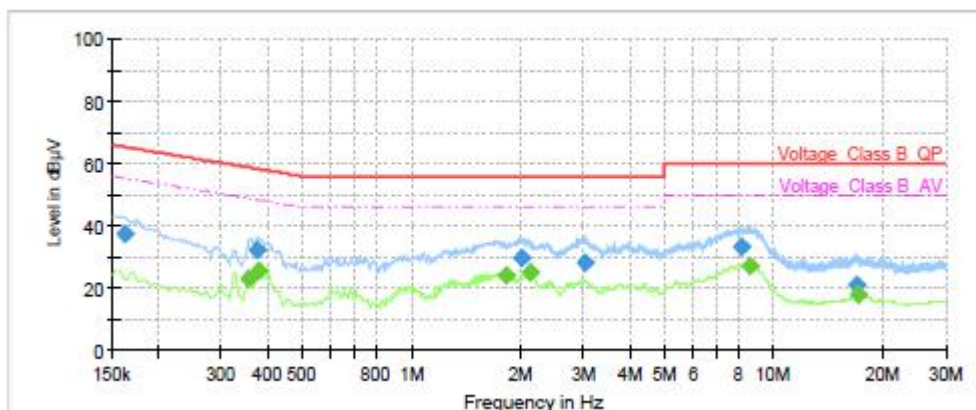
Frequency (MHz)	Conducted Limits(dB μ V)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46*
0.5 - 5	56	46
5 - 30	60	50
*: Decreases with the logarithm of the frequency.		

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$. $U = 2.57$ dB.

Test Results

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

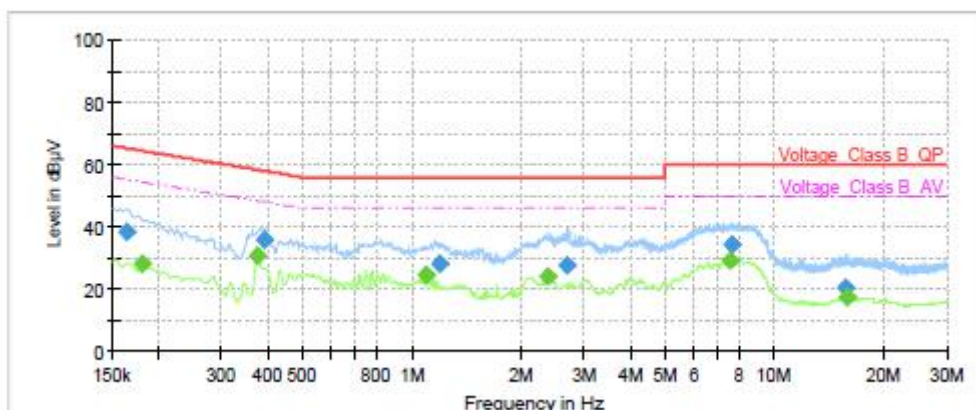


Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.16	37.60	---	65.40	27.80	70.0	9.000	L1	ON	21
0.36	---	23.29	48.80	25.51	70.0	9.000	L1	ON	21
0.38	32.14	---	58.34	26.20	70.0	9.000	L1	ON	21
0.38	---	25.87	48.29	22.42	70.0	9.000	L1	ON	21
1.84	---	24.12	46.00	21.88	70.0	9.000	L1	ON	20
2.03	29.83	---	56.00	26.17	70.0	9.000	L1	ON	20
2.14	---	25.29	46.00	20.71	70.0	9.000	L1	ON	20
3.01	28.24	---	56.00	27.76	70.0	9.000	L1	ON	19
8.14	33.32	---	60.00	26.68	70.0	9.000	L1	ON	20
8.66	---	27.30	50.00	22.70	70.0	9.000	L1	ON	20
17.04	20.96	---	60.00	39.04	70.0	9.000	L1	ON	20
17.15	---	18.03	50.00	31.97	70.0	9.000	L1	ON	20

Remark: Correct factor=cable loss + LISN factor

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	38.43	---	65.28	26.85	70.0	9.000	N	ON	21
0.18	---	28.06	54.42	26.36	70.0	9.000	N	ON	21
0.38	---	30.72	48.39	17.67	70.0	9.000	N	ON	21
0.39	35.78	---	58.05	22.27	70.0	9.000	N	ON	21
1.09	---	24.48	46.00	21.52	70.0	9.000	N	ON	20
1.20	28.02	---	56.00	27.98	70.0	9.000	N	ON	20
2.39	---	23.99	46.00	22.01	70.0	9.000	N	ON	20
2.69	27.78	---	56.00	28.22	70.0	9.000	N	ON	19
7.60	---	29.32	50.00	20.68	70.0	9.000	N	ON	20
7.65	34.35	---	60.00	25.65	70.0	9.000	N	ON	20
15.80	20.30	---	60.00	39.70	70.0	9.000	N	ON	20
15.92	---	17.47	50.00	32.53	70.0	9.000	N	ON	20

Remark: Correct factor=cable loss + LISN factor

N line

Conducted Emission from 150 KHz to 30 MHz

4 Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Time
Spectrum Analyzer	R&S	FSV40	15195-01-00	2020-05-17	2021-05-16
EMI Test Receiver	R&S	ESCI	100948	2020-05-17	2021-05-16
Trilog Antenna	SCHWARZBECK	VULB 9163	391	2019-12-16	2021-12-15
Horn Antenna	R&S	HF907	102723	2018-08-11	2021-08-10
Horn Antenna	ETS-Lindgren	3160-09	00102643	2018-06-20	2021-06-19
EMI Test Receiver	R&S	ESR	101667	2020-05-17	2021-05-16
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	/	/

*****END OF REPORT *****



ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.



ANNEX B: Test Setup Photos

The Test Setup Photos are submitted separately.