Underwriters Laboratories Inc.

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Project: 10CA05124
File: TC8329
Report: 10CA05124-FCC
Date: February 05, 2010
Model: NS 16 1G NN-O

FCC Certification Report

For

WDM-PON ONT

LG-NORTEL CO., LTD.

LG R&D Complex 533 Hogye-1dong, Dongan-gu, Anyang-si, Kyungki-do, 431-749, Korea

TEST REPORT DETAILS

Test Report No.	10CA05124-FCC
Tests Performed By:	UL Korea Ltd. 33rd FL. Gangnam Finance Center, 737 Yeoksam-dong, Kangnam-ku, Seoul, 135-984, Korea
Test site:	EMC Compliance Ltd. 480-5 Shin-dong, Yeongtong-gu, Suwon-city, Gyeonggi-do, 443-390, Korea
Applicant:	LG-Nortel Co. Ltd. LG R&D Complex 533 Hogye-1dong, Dongan-gu, Anyang-si, Kyungki-do, 431-749, Korea
Applicant Contact: Title: Phone: E-mail:	Mr. Young-Ho Son Chief Research Engineer 82-31-450-4263 yhsonb@lg-nortel.com
Test Report Date:	February 05, 2010
Product Type:	WDM-PON ONT
FCC ID:	TUINS161GNN-O
Product standards	FCC 47CFR Part 15 Subpart B Class B
FCC Classification :	Class B Digital Device
FCC Procedure :	Certification
Model Number:	NS 16 1G NN-O
Additional model Number:	None
Trade Name:	LG-NORTEL
Sample Serial Number:	None (Proto type)
Sample Receive Date:	January 12, 2010
Testing Start Date:	January 12, 2010
Date Testing Complete:	January 21, 2010
Overall Results:	**PASS**

UL Korea Ltd. reports apply only to the specific samples tested under stated test conditions. All samples tested were in good operating condition throughout the entire test program. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. UL Korea Ltd. shall have no liability for any deductions, inferences or generalizations drawn by the client or others from UL Korea Ltd. issued reports.

TEST SUMMARY

Test Result

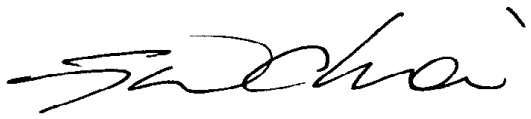
Requirement – Test	Reference standards	Result	Verdict
Conducted Disturbance at the mains ports	FCC Part 15 Subpart B, Class B	Pass	Complied
Radiated Disturbance		Pass	Complied

The tests listed in the Summary of Testing section of this report have been performed and the results recorded by UL Korea, Ltd. in accordance with the procedures stated in each test requirement and specification. The applicant determined the list of tests performed were applicable to the Equipment Under Test. As a result, the subject product has been verified to comply or not comply as noted in the Summary of Testing with each test specification. The test results relate only to the items tested.

The equipment under test has

☒ met the technical requirements

☐ not met the technical requirements



Tested by
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Conformity Assessment Services - 3014ASEO
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February 05, 2010

Report Directory

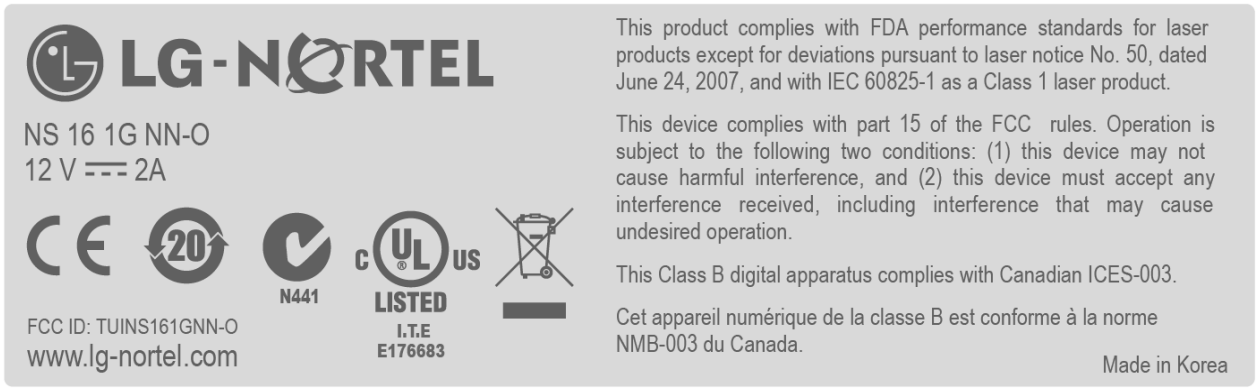
1. EQUIPMENT UNDER TEST(EUT)

1.1 Equipment Description

The NS 16 1G NN-O is ONT equipment which is located at the Customer premises end of a TurboLIGHT16 WDM-PON (Wavelength Division Multiplexing – Passive Optical Network) system.
The NS 16 1G NN-O converts 1.25 Gbps Gigabit Ethernet signal into WDM-PON optical signal which is transmitted to OLT through RN and getting WDM-PON optical signal from the RN in convert into 1.25 Gbps Gigabit Ethernet signal. These products will allow you to use the different services such as VoD (Video on Demand), EoD (Education on Demand), IP-TV and High speed internet access available from your provider.

Optical Interface	
Optical cable	Single mode optical fiber
Line Rate	1.25 Gbps
Optical Interface	SC/APC connetor
Optic Transceiver	C band : Uplink, E band :Downlink
Power	12V,2 A
Ethernet Port	
Operation mode	Giga bit Ethernet / Auto-Negotiation Mode
Electrical interface	RJ-45 connector
Environmental Conditions	
Operating temperature	-40℃ to 65℃
Operating humidity	5% to 90%

1.2 Equipment Marking Plate



1.3 Equipment Used During Test

Use*	Product Type	Manufacturer	Model	Comments
EUT	WDM-PON ONT	LG-NORTEL Co., Ltd.	NS 16 1G NN-O	-
SIM	WDM-PON OLT	LG-NORTEL Co., Ltd	NS 16 1G CO	-
AE	AC Power Adapter	FSP Group INC	FSP024-DACA1	-
AE	Uninterruptible Power Supply	Cyberpower system.Inc	CS24U12V	-
SIM	Remote Node	LG-NORTEL Co., Ltd	NS 16 1G PN	
SIM	Data Quality Analyzer	Anritsu	MD1230A	-
* Note: **EUT** - Equipment Under Test , **AE** - Auxiliary/Associated Equipment, **SIM** - Simulator (Not Subjected to Test)				

1.4 Input/Output Ports

Port #	Name	Type*	Cable Max. >3m	Cable Shielded	Comments
1	Mains Power Input	AC	< 3m	Unshielded	Connected with EUT/Adaptor
2	Fiber Optic	TP	>10 m	Optic cable	Connected to RN (OPTICAL)
3	Fast Ethernet	TP	>10 m	Unshielded	Connected to Data Quality Analyzer
4	1000Base-LX/SX	TP	>10m	Optic cable	Connected to Data Quality Analyzer

Note:
*AC = AC Power Port DC = DC Power Port N/E = Non-Electrical
I/O = Signal Input or Output Port (Not Involved in Process Control)
TP = Telecommunication Ports

1.5 EUT Internal Operating Frequencies:

Frequency (MHz)	Description	Frequency (MHz)	Description
25	Main PBA	133	Main PBA
125	Main PBA	-	-

1.6 Power Interface:

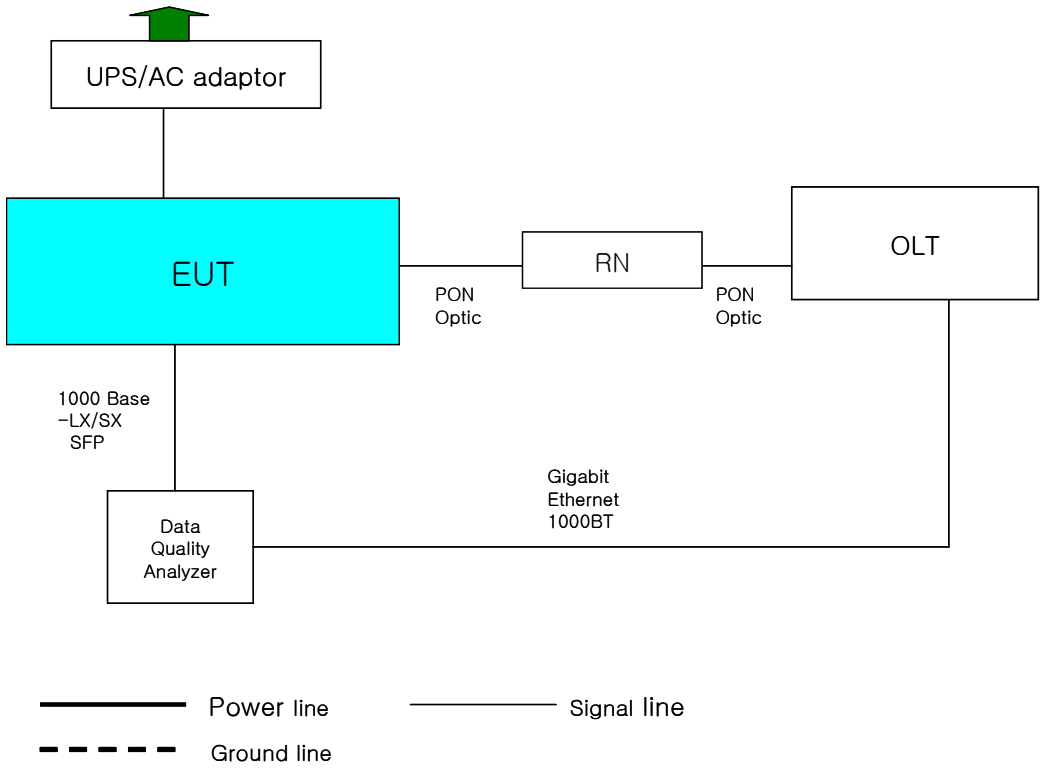
Mode #	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (#)	Comments
Rated	100-240Vac	0.8A	-	50 - 60HZ	Single Phase	Input of AC/DC Adapter
	100-240Vac	0.75A	-	50 - 60HZ	Single Phase	Input of UPS
1	120Vac	-	-	60HZ	Single Phase	Input of AC/DC Adapter
2	120V ac	-	-	60HZ	Single Phase	Input of UPS

2. EUT Operation Modes:

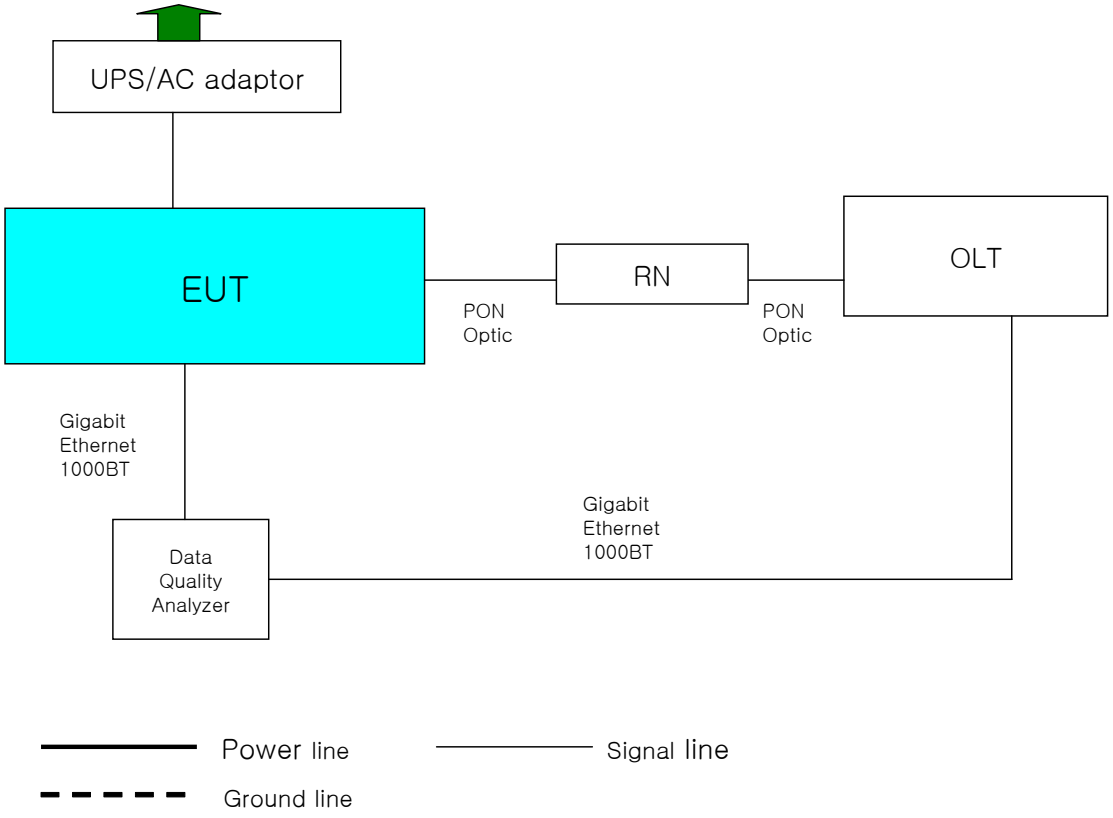
Mode #	Description
1	**Communication link and Data transmission function with SFP mode** Emission & Immunity tests have been performed by establishing optic communication links between ONT and OLT OCU through RN interface. To simulator and check the optic communication link Quality, the Data Quality Analyzer(MD1230A) was used for Ethernet packet data sending/receiving For 1000Base-LX/SX Optic SFP port of EUT FX port.
2	**Communication link and Data transmission function with TP mode** Emission & Immunity tests have been performed by establishing optic communication links between ONT and OLT OCU through RN interface. To simulator and check the optic communication link Quality, the Data Quality Analyzer(MD1230A) was used for Ethernet packet data sending/receiving For Gigabit Ethernet port of EUT TP port.

3. EUT Configurations:

Mode 1 : Communication link and Data transmission function with SFP mode
Power by AC/DC Adapter or UPS



Mode 2 : Communication link and Data transmission function with TP mode
Power by AC/DC Adapter or UPS



4. CONDUCTED EMISSION

	TEST: Limits of mains terminal disturbance voltage
Method	Measurements were made on a ground plane that extends 1-meter minimum beyond all sides of the system under test. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on mains lines were made at the output of the AMN.

Test Environment		
Parameters recorded during the test	Laboratory Ambient Temperature	22.1 °C
	Relative Humidity	44 %
	Frequency range on each side of line	Measurement Point
Fully configured sample scanned over the following frequency range	150kHz to 30MHz	Mains Power Input

Limits - Class A

Frequency (MHz)	Limit (dBµV)			
	Quasi-Peak	Results	Average	Results
0.15 to 0.50	79	N/A	66	N/A
0.50 to 30	73	N/A	60	N/A

Limits - Class B

Frequency (MHz)	Limit (dBµV)			
	Quasi-Peak	Results	Average	Results
0.15 to 0.50	66 to 56	Pass	56 to 46	Pass
0.50 to 5	56	Pass	46	Pass
5 to 30	60	Pass	50	Pass

Supplementary information: None

Test Equipment Used

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Test Receiver	R&S	ESHS10	843276/003	2009. 06. 08	2010. 06. 08
LISN	R&S	ESH3-Z5	100267	2009. 07. 06	2010. 07. 06
ISN	TESEQ	T800	24314	2009. 12. 03	2010. 12. 03

Table 1. Test data for conducted emission :

SFP Mode with AC/DC Adapter_L1

Frequency	Correction Factor		Line	Quasi-peak			Average		
				Limit	Reading	Result	Limit	Reading	Result
[MHz]	LISN	Cable		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]
0.189	0.07	0.2	H	64.08	42.48	42.75	54.08	30.68	30.95
0.261	0.07	0.2	H	61.40	40.30	40.57	51.40	28.09	28.36
0.321	0.07	0.2	H	59.68	42.57	42.84	49.68	32.01	32.28
0.639	0.08	0.2	H	56.00	42.82	43.10	46.00	30.38	30.66
0.858	0.08	0.3	H	56.00	43.80	44.18	46.00	30.50	30.88
1.071	0.09	0.2	H	56.00	41.90	42.19	46.00	29.79	30.08
5.380	0.21	0.1	H	60.00	30.32	30.63	50.00	19.45	19.76
10.900	0.48	0.2	H	60.00	25.65	26.33	50.00	13.72	14.40
22.650	1.04	0.5	H	60.00	18.48	20.02	50.00	10.02	11.56

SFP Mode with AC/DC Adapter_N

Frequency	Correction Factor		Line	Quasi-peak			Average		
				Limit	Reading	Result	Limit	Reading	Result
[MHz]	LISN	Cable		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]
0.189	0.07	0.2	N	64.08	41.88	42.15	54.08	30.27	30.54
0.324	0.07	0.2	N	59.60	43.31	43.58	49.60	31.60	31.87
0.480	0.08	0.2	N	56.34	41.55	41.83	46.34	27.29	27.57
0.660	0.08	0.2	N	56.00	43.02	43.30	46.00	29.20	29.48
0.870	0.08	0.3	N	56.00	41.96	42.34	46.00	29.77	30.15
1.275	0.09	0.2	N	56.00	42.23	42.52	46.00	28.90	29.19
6.300	0.30	0.1	N	60.00	27.58	27.98	50.00	15.99	16.39
10.700	0.48	0.2	N	60.00	24.27	24.95	50.00	12.59	13.27
24.420	1.10	0.1	N	60.00	17.88	19.08	50.00	9.21	10.41

TP Mode with AC/DC Adapter_L1

Frequency	Correction Factor		Line	Quasi-peak			Average		
				Limit	Reading	Result	Limit	Reading	Result
[MHz]	LISN	Cable		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]
0.165	0.07	0.2	H	65.21	42.52	42.79	55.21	26.69	26.96
0.189	0.07	0.2	H	64.08	42.74	43.01	54.08	29.52	29.79
0.384	0.08	0.2	H	58.19	42.30	42.58	48.19	30.00	30.28
0.462	0.08	0.2	H	56.66	43.08	43.36	46.66	28.81	29.09
0.630	0.08	0.2	H	56.00	42.76	43.04	46.00	30.24	30.52
0.870	0.08	0.3	H	56.00	42.70	43.08	46.00	30.00	30.38
1.056	0.09	0.2	H	56.00	43.42	43.71	46.00	31.31	31.60
5.310	0.21	0.1	H	60.00	30.43	30.74	50.00	20.17	20.48
10.760	0.48	0.2	H	60.00	27.04	27.72	50.00	16.09	16.77
29.890	1.20	0.4	H	60.00	21.81	23.41	50.00	15.50	17.10

TP Mode with AC/DC Adapter_N

Frequency	Correction Factor		Line	Quasi-peak			Average		
				Limit	Reading	Result	Limit	Reading	Result
[MHz]	LISN	Cable		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]
0.159	0.07	0.2	N	65.52	42.58	42.85	55.52	22.49	22.76
0.189	0.07	0.2	N	64.08	42.34	42.61	54.08	29.12	29.39
0.324	0.07	0.2	N	59.60	40.93	41.20	49.60	29.13	29.40
0.465	0.08	0.2	N	56.60	41.54	41.82	46.60	28.38	28.66
0.630	0.08	0.2	N	56.00	42.12	42.40	46.00	29.79	30.07
0.822	0.08	0.3	N	56.00	41.61	41.99	46.00	30.56	30.94
1.056	0.09	0.2	N	56.00	42.88	43.17	46.00	30.79	31.08
5.380	0.21	0.1	N	60.00	29.45	29.76	50.00	18.88	19.19
10.680	0.48	0.2	N	60.00	24.75	25.43	50.00	12.76	13.44
29.900	1.20	0.4	N	60.00	20.36	21.96	50.00	14.25	15.85

SFP mode with UPS_L1

Frequency	Correction Factor		Line	Quasi-peak			Average		
				Limit	Reading	Result	Limit	Reading	Result
[MHz]	LISN	Cable		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]
0.153	0.07	0.2	H	65.83	52.16	52.43	55.83	24.43	24.70
0.204	0.07	0.2	H	63.45	58.48	58.75	53.45	49.43	49.70
0.270	0.07	0.2	H	61.12	54.13	54.40	51.12	44.75	45.02
0.402	0.08	0.2	H	57.81	48.42	48.70	47.81	37.77	38.05
0.543	0.08	0.2	H	56.00	43.29	43.57	46.00	30.78	31.06
0.741	0.08	0.3	H	56.00	41.33	41.71	46.00	27.17	27.55
1.254	0.09	0.2	H	60.00	40.10	40.39	50.00	25.01	25.30
2.949	0.15	0.2	H	60.00	37.31	37.66	50.00	21.85	22.20
13.270	0.62	0.3	H	60.00	36.08	37.00	50.00	28.13	29.05
16.150	0.76	0.2	H	60.00	30.49	31.45	50.00	21.94	22.90
24.020	1.10	0.1	H	56.00	27.00	28.20	46.00	24.99	26.19

SFP mode with UPS_N

Frequency	Correction Factor		Line	Quasi-peak			Average		
				Limit	Reading	Result	Limit	Reading	Result
[MHz]	LISN	Cable		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]
0.153	0.07	0.2	N	65.84	52.02	52.29	55.84	25.42	25.69
0.204	0.07	0.2	N	63.45	58.63	58.90	53.45	49.80	50.07
0.276	0.07	0.2	N	60.94	54.45	54.72	50.94	45.01	45.28
0.405	0.08	0.2	N	57.75	48.54	48.82	47.75	38.01	38.29
0.537	0.08	0.2	N	56.00	43.77	44.05	46.00	31.05	31.33
0.756	0.08	0.3	N	56.00	41.77	42.15	46.00	27.67	28.05
1.395	0.09	0.2	N	56.00	39.96	40.25	46.00	25.64	25.93
13.880	0.69	0.2	N	60.00	36.01	36.90	50.00	28.28	29.17
16.380	0.76	0.2	N	60.00	30.32	31.28	50.00	22.27	23.23
24.020	1.10	0.1	N	60.00	27.68	28.88	50.00	25.43	26.63

TP mode with UPS_L1

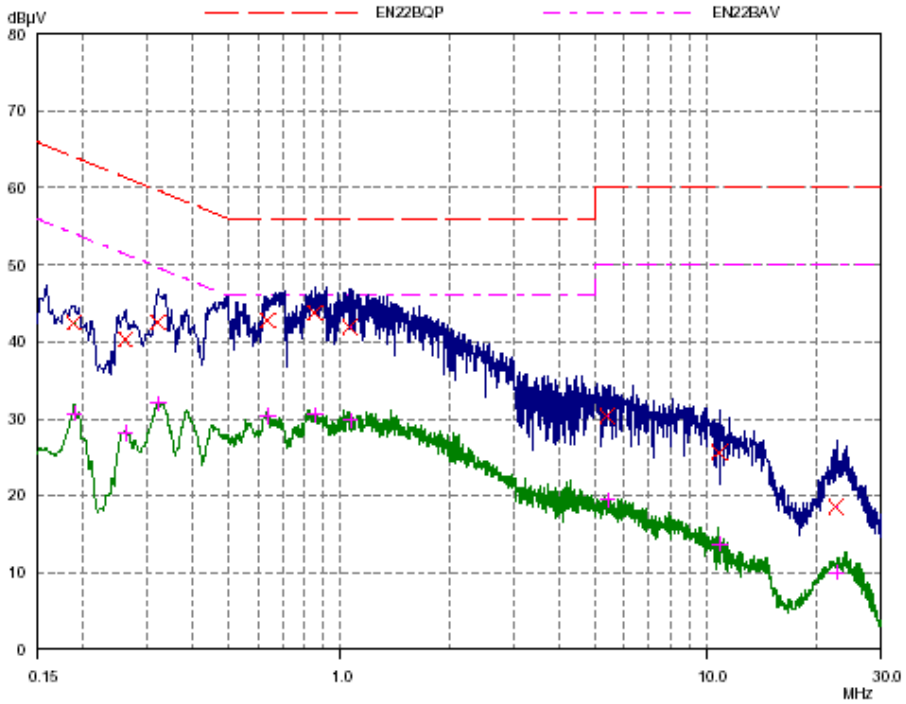
Frequency	Correction Factor		Line	Quasi-peak			Average		
				Limit	Reading	Result	Limit	Reading	Result
[MHz]	LISN	Cable		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]
0.156	0.07	0.2	H	65.67	52.38	52.65	55.67	24.65	24.92
0.204	0.07	0.2	H	63.45	56.62	56.89	53.45	48.53	48.80
0.270	0.07	0.2	H	61.12	53.82	54.09	51.12	45.21	45.48
0.333	0.07	0.2	H	59.38	45.40	45.67	49.38	31.18	31.45
0.408	0.08	0.2	H	57.69	48.10	48.38	47.69	38.09	38.37
0.546	0.08	0.2	H	56.00	42.76	43.04	46.00	30.47	30.75
0.609	0.08	0.2	H	56.00	42.02	42.30	46.00	29.47	29.75
0.741	0.08	0.3	H	56.00	41.82	42.20	46.00	27.95	28.33
1.257	0.09	0.2	H	56.00	39.98	40.27	46.00	26.59	26.88
14.130	0.69	0.2	H	60.00	30.34	31.23	50.00	22.99	23.88
16.790	0.79	0.5	H	60.00	28.26	29.55	50.00	21.33	22.62
23.970	1.10	0.1	H	60.00	24.88	26.08	50.00	22.11	23.31

TP mode with UPS_N

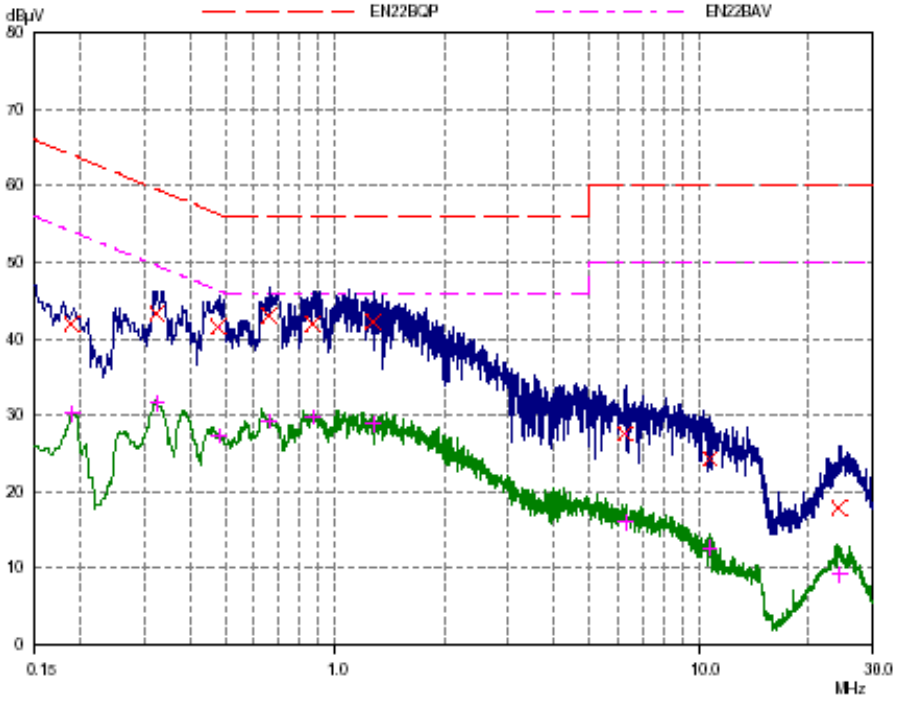
Frequency	Correction Factor		Line	Quasi-peak			Average		
				Limit	Reading	Result	Limit	Reading	Result
[MHz]	LISN	Cable		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]
0.150	0.07	0.2	N	66.00	53.88	54.15	56.00	27.20	27.47
0.201	0.07	0.2	N	63.57	57.64	57.91	53.57	47.76	48.03
0.267	0.07	0.2	N	61.21	54.50	54.77	51.21	44.33	44.60
0.408	0.08	0.2	N	57.69	48.18	48.46	47.69	38.20	38.48
0.540	0.08	0.2	N	56.00	43.08	43.36	46.00	30.47	30.75
0.627	0.08	0.2	N	56.00	42.14	42.42	46.00	29.62	29.90
0.765	0.08	0.3	N	56.00	41.96	42.34	46.00	28.17	28.55
1.260	0.09	0.2	N	56.00	40.46	40.75	46.00	27.00	27.29
14.380	0.69	0.2	N	60.00	30.74	31.63	50.00	23.07	23.96
17.300	0.79	0.5	N	60.00	30.76	32.05	50.00	23.90	25.19
24.310	1.10	0.1	N	60.00	25.16	26.36	50.00	22.41	23.61

Figure 1. Operating condition : Graphical representation of conducted emissions

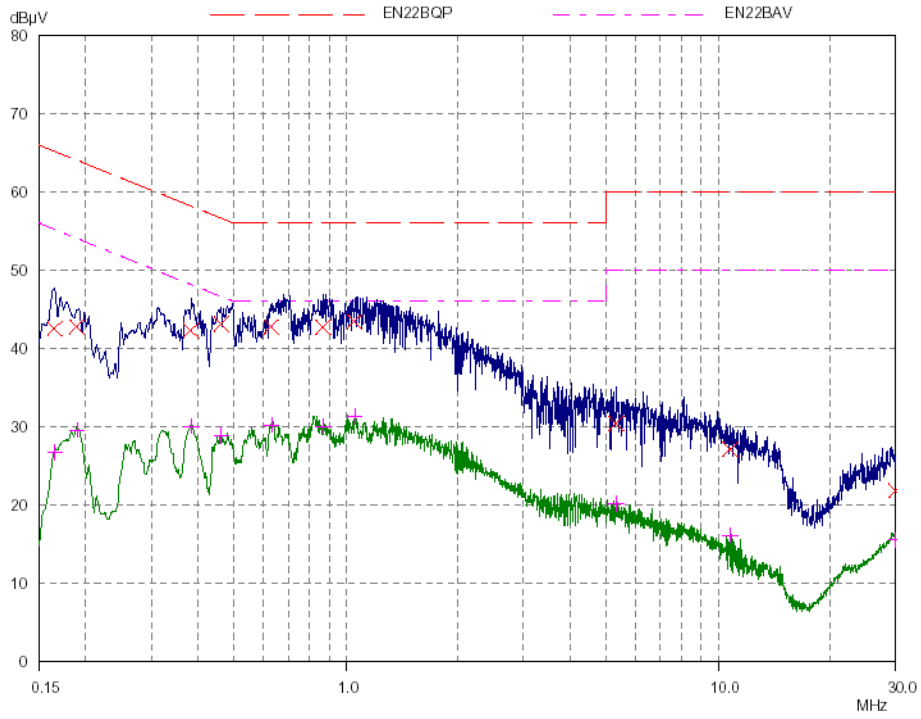
SFP Mode with AC/DC Adapter_L1



SFP Mode with AC/DC Adapter_N



TP Mode with AC/DC Adapter_L1



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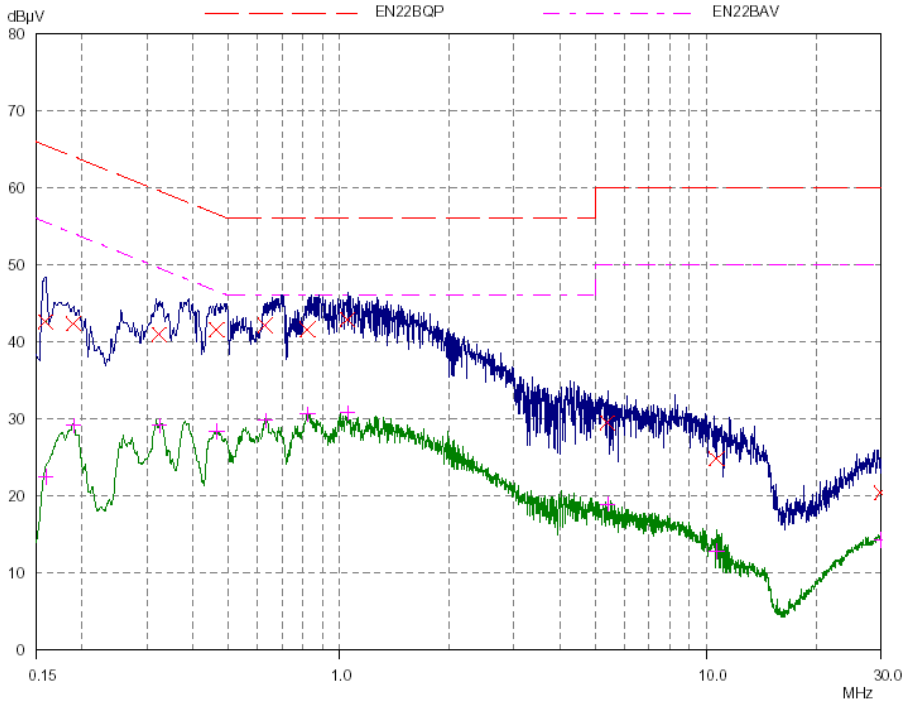
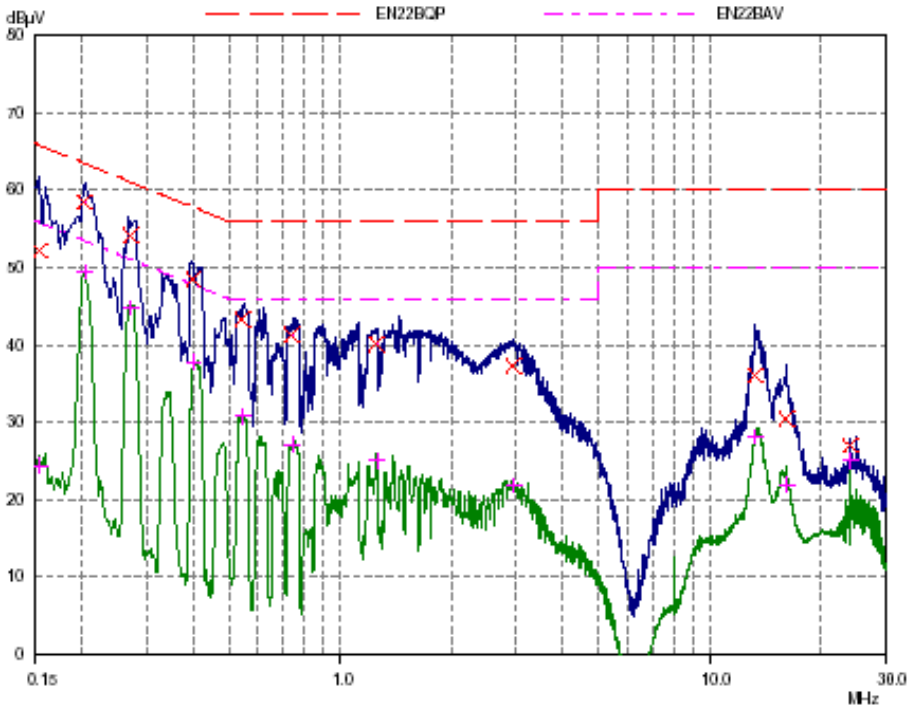


SFP mode with UPS_L1



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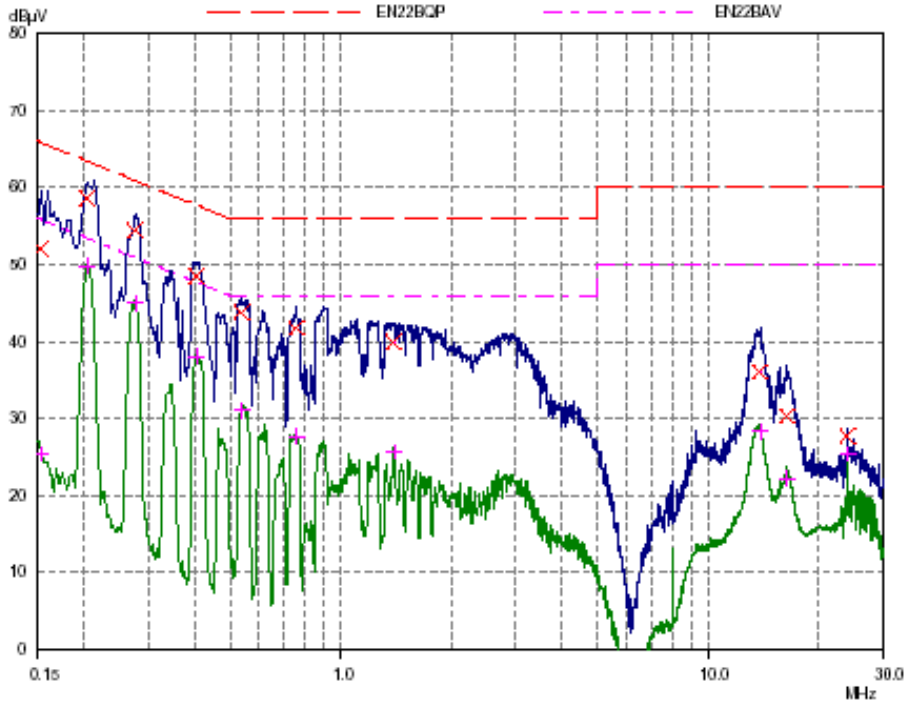
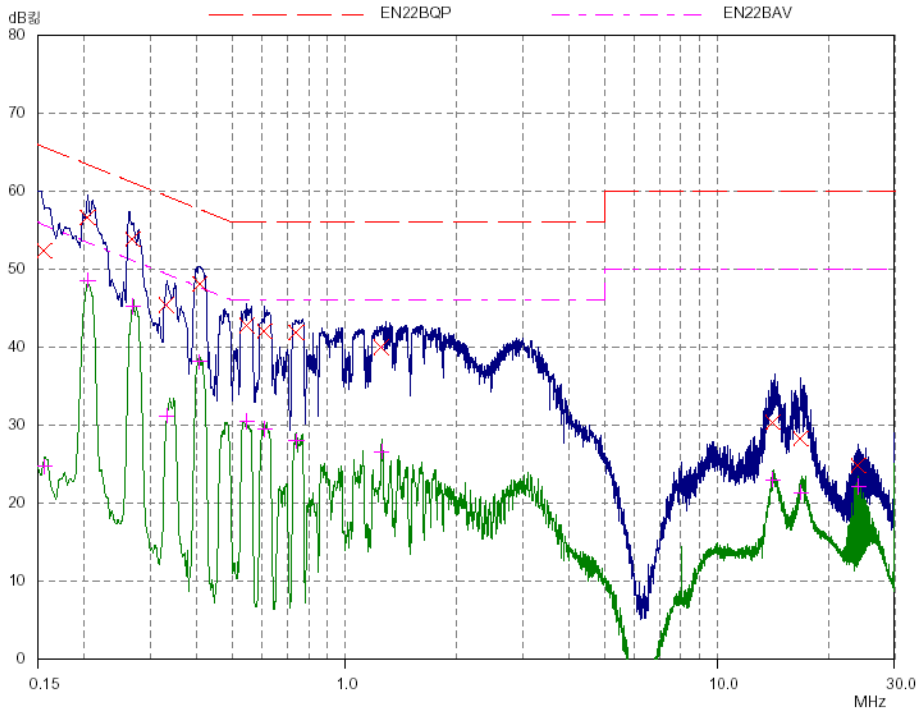
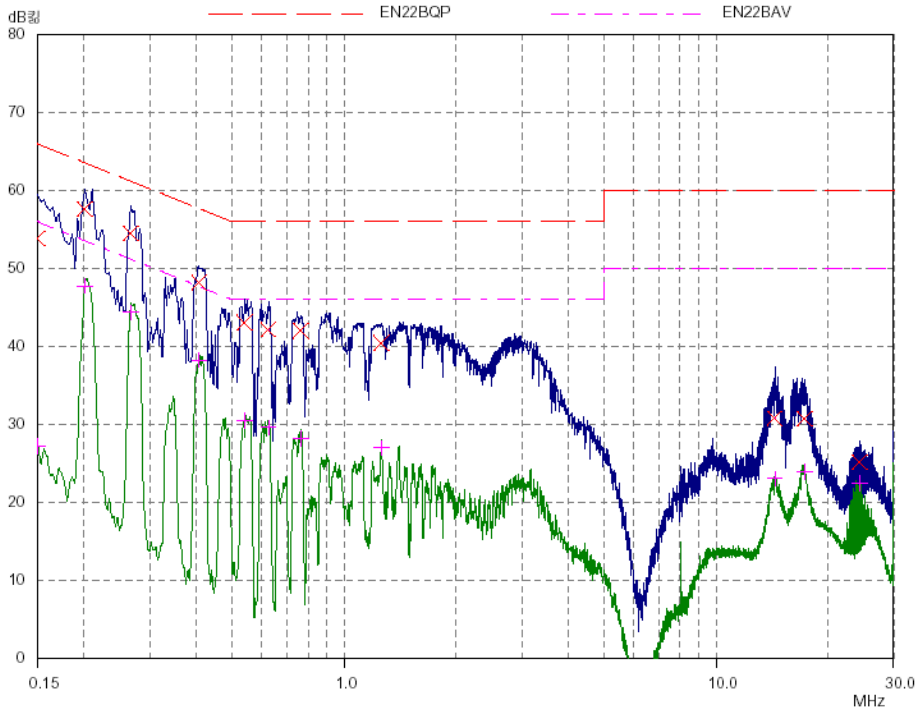


TP mode with UPS_L1



TP mode with UPS_N



5. RADIATED EMISSION

	TEST: Limits for radiated disturbance
Method	Measurements were made at 10m Anechoic chamber that complies to CISPR 16/ANSI C63.4. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 10-meter and 3-meter. The EUT was rotated 360° about its azimuth with the receive antenna located at 1, 2, 3 and 4 meter heights in both horizontal and vertical polarities. Final measurements (quasi-peak or average as noted) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4-meters. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.

TEST ENVIRONMENT		
Parameters recorded during the test	Laboratory Ambient Temperature	24.8 °C
	Relative Humidity	43 %
Fully configured sample scanned over the following frequency range	Frequency range	Measurement Point
	30MHz – 2GHz	Product Enclosure

Limits - Class A

Frequency (MHz)	Limit (dBμV/m)	
	Quasi-Peak	Results
30 to 230	40	N/A
230 to 1000	47	N/A
1000 to 2000	60/80(AV/Peak, 3m distance)	N/A

Limits - Class B

Frequency (MHz)	Limit (dBμV/m)	
	Quasi-Peak(10m distance)	Results
30 to 230	30	Pass
230 to 1000	37	Pass
1000 to 2000	54/74(AV/Peak, 3m distance)	Pass

Supplementary information:

Test Equipment Used

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Test Receiver	R&S	ESCI	100710	2009.12.01	2010.12.01
Bi-Log Antenna	SCHWARZBECK	VULB 9168	375	2009.11.30	2010.11.30
Amplifier	SONOMA INSTRUMENT	310N	284608	2009.07.08	2010.07.08
3dB Attenuator	HP	8491A	16861	2009.01.09	2011.01.09
Horn ANT	ETS	3115	00062589	2009.12.22	2011.12.21
Antenna Mast	MATURO	AM4.0	079/3440509	-	-
Turn Table	MATURO	CO2000-SOFT	-	-	-

Table 3. Radiated emission Test data :

SFP Mode with AC/DC Adapter

Frequency (MHz)	Reading QP (dBuV/m)	Pol.	Factor [dB(1/m)]	Level QP B(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
266.678	48.1	V	-16	32.1	37	4.9	100	109.1
315.19	41	H	-14.2	26.8	37	10.2	302	298.7
400.02	41.8	V	-11.9	29.9	37	7.1	100	177.9
500	38.2	H	-9.2	29	37	8	100	72.6
675.036	39.5	H	-5.5	34	37	3	100	344
725.032	38	H	-4.6	33.4	37	3.6	336	321.3
975.042	32.9	H	-0.1	32.8	37	4.2	100	36.2
Supplementary information: This table is to be use when Gain/Loss and Transducer Factors are provided separately.								

SFP Mode with AC/DC Adapter_Above 1G

Frequency (MHz)	Pol.	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV)]	Level PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]
1687.48	H	55.5	58.9	-3.2	52.3	55.7	54	74	1.7	18.3	100	155.9
1687.49	V	52.2	55.9	-3.2	49	52.7	54	74	5	21.3	100	211.4
1812.6	H	49.7	54.2	-2.7	47	51.5	54	74	7	22.5	100	152.2
1812.6	V	49.6	53.8	-2.7	46.9	51.1	54	74	7.1	22.9	100	168
1938	V	54.3	57.5	-1.9	52.4	55.6	54	74	1.6	18.4	100	163.7
1937.52	H	51.6	55.1	-1.9	49.7	53.2	54	74	4.3	20.8	100	146.3
Supplementary information: This table is to be use when Gain/Loss and Transducer Factors are provided separately.												

TP Mode with AC/DC Adapter

Frequency (MHz)	Reading QP (dBuV/m)	Pol.	Factor [dB(1/m)]	Level QP B(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
400.014	42.8	V	-11.9	30.9	37	6.1	100	211.1
500	40.3	H	-9.2	31.1	37	5.9	202	52.6
575.03	39.5	V	-7.5	32	37	5	400	198.2
675	40.2	H	-5.5	34.7	37	2.3	100	339.5
725.032	36.4	H	-4.6	31.8	37	5.2	400	311.9
775	35.1	H	-3.8	31.3	37	5.7	100	350.9
925.039	34	H	-1	33	37	4	100	312.9
975.046	33.7	H	-0.1	33.6	37	3.4	100	334
Supplementary information: This table is to be use when Gain/Loss and Transducer Factors are provided separately.								

TP Mode with AC/DC Adapter_ Above 1G

Frequency (MHz)	Pol.	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV)]	Level PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]
1374	H	32.9	50.6	-4.4	28.5	46.2	54	74	25.5	27.8	100	151.4
1626	H	46.9	51.1	-3.4	43.5	47.7	54	74	10.5	26.3	100	145.5
1690	H	54.1	54.9	-3.2	50.9	51.7	54	74	3.1	22.3	100	151.4
1814	H	47.4	51.7	-2.6	44.8	49.1	54	74	9.2	24.9	100	145.5
1938	V	54.5	58.1	-1.9	52.6	56.2	54	74	1.4	17.8	100	217.6
1374	H	32.9	50.6	-4.4	28.5	46.2	54	74	25.5	27.8	100	151.4
Supplementary information: This table is to be use when Gain/Loss and Transducer Factors are provided separately.												

SFP Mode with UPS

Frequency (MHz)	Reading QP (dBuV/m)	Pol.	Factor [dB(1/m)]	Level QP B(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
30.94	33.6	H	-18	15.6	30	14.4	400	359.9
133.4	38.5	V	-16.7	21.8	30	8.2	400	63.7
182.28	32.5	V	-17.8	14.7	30	15.3	100	184.8
266.684	48.3	V	-16	32.3	37	4.7	100	159.9
400.014	37.7	H	-11.9	25.8	37	11.2	201	193.2
725.042	30.6	H	-4.6	26	37	11	100	132.4
Supplementary information: This table is to be use when Gain/Loss and Transducer Factors are provided separately.								

SFP Mode with UPS _ Above 1G

Frequency (MHz)	Pol.	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV)]	Level PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]
1626	V	47.2	52.5	-3.4	43.8	49.1	54	74	10.2	24.9	100	301.9
1687.52	V	55.2	58.6	-3.2	52	55.4	54	74	2	18.6	100	293.1
1687.554	H	50.1	54.3	-3.2	46.9	51.1	54	74	7.1	22.9	100	148.2
1812.61	V	47.2	52	-2.7	44.5	49.3	54	74	9.5	24.7	100	166.7
1937.54	H	47.1	51.8	-1.9	45.2	49.9	54	74	8.8	24.1	151	227.5
1937.54	V	52.7	56.5	-1.9	50.8	54.6	54	74	3.2	19.4	141	330.9
Supplementary information: This table is to be use when Gain/Loss and Transducer Factors are provided separately.												

TP Mode with UPS

Frequency (MHz)	Reading QP (dBuV/m)	Pol.	Factor [dB(1/m)]	Level QP B(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
30.94	36.1	V	-18	18.1	30	11.9	400	342.8
86.4	37.8	V	-21	16.8	30	13.2	199	133.8
266.88	47.1	V	-16	31.1	37	5.9	100	165.9
315.76	41.1	V	-14.2	26.9	37	10.1	100	13.6
400.36	39.3	H	-11.9	27.4	37	9.6	302	75.8
725.04	31.5	H	-4.6	26.9	37	10.1	164	285.8
Supplementary information: This table is to be use when Gain/Loss and Transducer Factors are provided separately.								

TP Mode with UPS_ Above 1G

Frequency (MHz)	Pol.	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV)]	Level PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]
1062	V	32	69.6	-6.8	25.2	62.8	54	74	28.8	11.2	100	232.1
1172	H	31.6	58.6	-6	25.6	52.6	54	74	28.4	21.4	152	133.3
1286	V	32.2	58.6	-5.5	26.7	53.1	54	74	27.3	20.9	199	236.1
1386	V	31.8	57.9	-4.6	27.2	53.3	54	74	26.8	20.7	100	142.2
1524	V	31.3	59.7	-4.4	26.9	55.3	54	74	27.1	18.7	100	229.2
1658	H	31.1	58.1	-3.3	27.8	54.8	54	74	26.2	19.2	152	163.3
Supplementary information: This table is to be use when Gain/Loss and Transducer Factors are provided separately.												

Appendix A_Accreditations and Authorizations

KCC: Designated as a testing laboratory by Radio Research Agency in accordance with the Regulation on Designation of Testing Laboratory for Information and Communication Equipment. Registration No. : KR0040

FCC: As a Conformity Assessment Body (CAB), our organization is designated to perform compliance testing on equipment subject to Declaration Of Conformity (DOC) and Certification under Part 15 and 18 of the Commission's Rules in a letter dated August 16, 2005 (Dsignation No. KR0040).

Appendix B_Measurement Uncertainties

Test	Uncertainty
Radiated Emissions	±4.08 dB
Conducted Emissions	±2.0 dB