

DATA OF CONDUCTED EMISSION TESTUL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2021/09/24

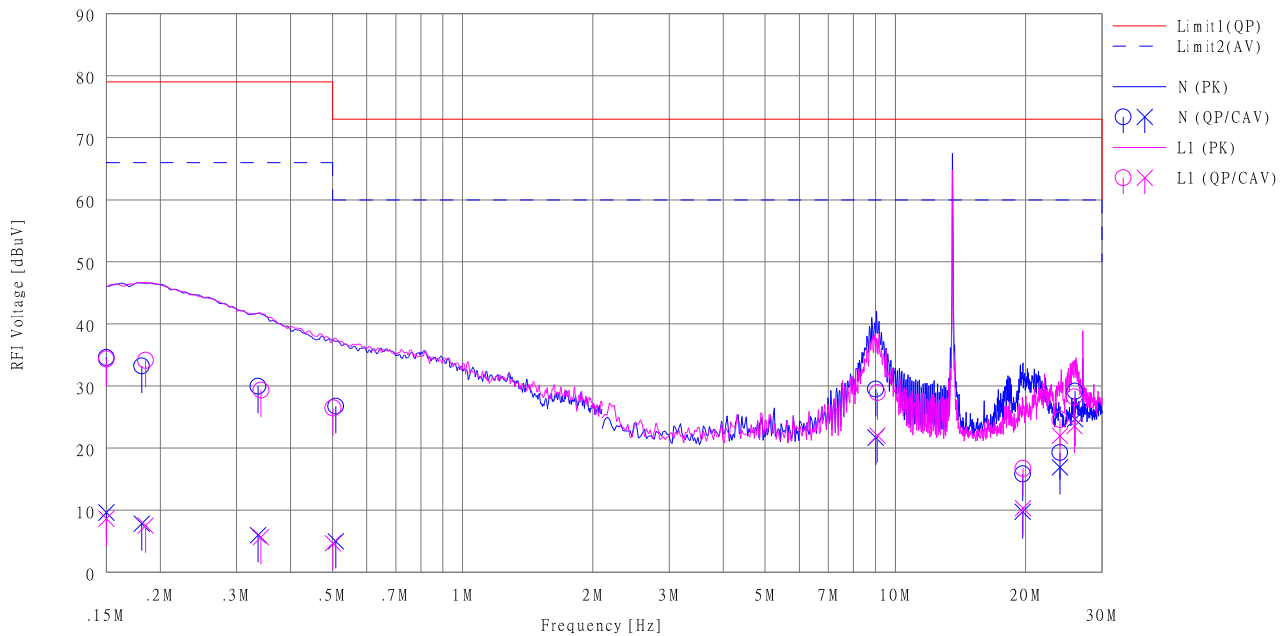
Company : NITTOKU CO.,LTD
 Kind of EUT : HF-Band RFID READER/WRITER
 Model No. : ITS-HRW110
 Serial No. : Refer to Section 4.2
 Remarks : with Tag

Mode : Operation mode
 Order No. : 13801638S
 Power : AC 120 V / 60 Hz (DC Power Supply)
 Temp./Humi. : 24 deg.C / 45 %RH

Limit : FCC_Part 15 Subpart B(15.107)_Class A

Engineer : Shuma Terasawa

※ 13.56 MHz is NFC Carrier and 27.12 MHz is Second harmonic of NFC Carrier.



No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<OP>	<CAV>		<OP>	<CAV>	<OP>	<AV>	<OP>	<AV>		
		[dBuV]	[dBuV]		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	22.20	-2.80	12.42	34.62	9.62	79.00	66.00	44.3	56.3	N	
2	0.18122	20.80	-4.60	12.43	33.23	7.83	79.00	66.00	45.7	58.1	N	
3	0.33650	17.50	-6.50	12.45	29.95	5.95	79.00	66.00	49.0	60.0	N	
4	0.50910	14.30	-7.50	12.47	26.77	4.97	73.00	60.00	46.2	55.0	N	
5	9.00821	16.60	8.80	12.90	29.50	21.70	73.00	60.00	43.5	38.3	N	
6	19.67300	2.50	-3.60	13.33	15.83	9.73	73.00	60.00	57.1	50.2	N	
7	23.99930	5.80	3.40	13.49	19.29	16.89	73.00	60.00	53.7	43.1	N	
8	26.00052	15.60	11.10	13.57	29.17	24.67	73.00	60.00	43.8	35.3	N	
9	0.15000	21.90	-3.80	12.43	34.33	8.63	79.00	66.00	44.6	57.3	L1	
10	0.18496	21.70	-4.90	12.43	34.13	7.53	79.00	66.00	44.8	58.4	L1	
11	0.34191	16.90	-6.80	12.44	29.34	5.64	79.00	66.00	49.6	60.3	L1	
12	0.50131	14.00	-7.80	12.46	26.46	4.66	73.00	60.00	46.5	55.3	L1	
13	9.08628	16.10	9.20	12.84	28.94	22.04	73.00	60.00	44.0	37.9	L1	
14	19.71400	3.60	-2.80	13.13	16.73	10.33	73.00	60.00	56.2	49.6	L1	
15	23.99780	11.40	8.80	13.20	24.60	22.00	73.00	60.00	48.4	38.0	L1	
16	25.92158	15.00	10.30	13.23	28.23	23.53	73.00	60.00	44.7	36.4	L1	

Calculation: Result[dBuV]=Reading[dBuV]+C.Fac(LISN(AMN)+Cable+ATT)[dB]
 LISN(AMN) : SLS-05

DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.2 Semi-Anechoic Chamber

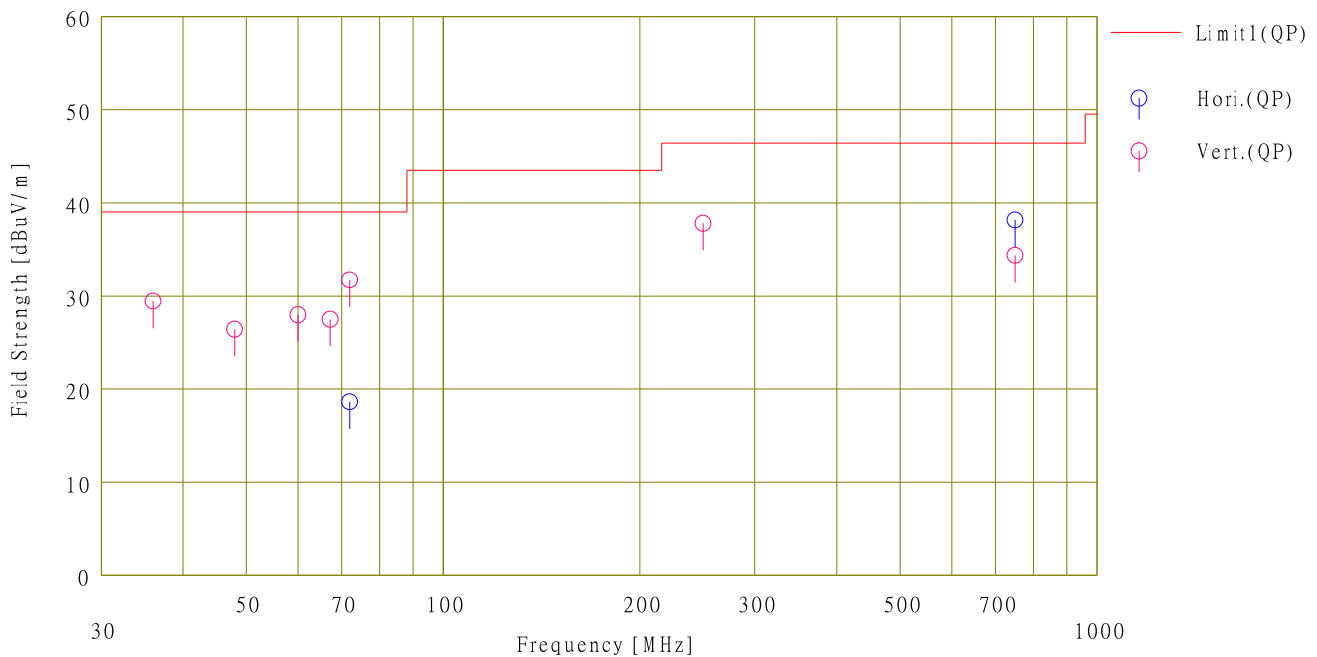
Date : 2021/09/23

Company : NITTOKU CO.,LTD
 Kind of EUT : HF-Band RFID READER/WRITER
 Model No. : ITS-HRW110
 Serial No. : Refer to Section 4.2
 Remarks : EUT: X/X Ant: Z/X, with Tag

Mode : Operation mode
 Order No. : 13801638S
 Power : DC 12 V
 Temp./Humi. : 23 deg.C / 63 %RH

Limit : FCC_Part 15 Subpart B(15.109)_Class A

Engineer : Yasumasa Owaki



No.	Freq. [MHz]	Reading <QP>	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result <QP>	Limit <QP>	Margin <QP>	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		[dBuV]					[dBuV/m]	[dBuV/m]	[dB]					
1	72.000	36.70	6.33	7.58	31.89	-0.09	18.63	39.00	20.3	Hori.	400	359	BC	
2	750.015	40.30	20.32	9.00	31.47	0.00	38.15	46.40	8.2	Hori.	158	2	LP	
3	36.000	38.00	16.39	7.05	31.91	-0.08	29.45	39.00	9.5	Vert.	100	86	BC	
4	48.000	39.20	11.89	7.26	31.90	-0.03	26.42	39.00	12.5	Vert.	100	17	BC	
5	60.000	44.70	8.13	7.42	31.89	-0.37	27.99	39.00	11.0	Vert.	100	76	BC	
6	67.235	45.40	6.84	7.52	31.89	-0.38	27.49	39.00	11.5	Vert.	218	40	BC	
7	72.000	49.80	6.33	7.58	31.89	-0.09	31.73	39.00	7.2	Vert.	187	88	BC	
8	250.000	51.50	11.91	6.09	31.71	0.00	37.79	46.40	8.6	Vert.	100	334	LP	
9	750.015	36.50	20.32	9.00	31.47	0.00	34.35	46.40	12.0	Vert.	100	2	LP	

Calculation: Result[dBuV/m] = Reading[dBuV] + Ant.Fac[dB/m] + Loss(Cable + ATT)[dB] - Gain(AMP)[dB] + S.Fac(ΔAF)[dB]
 Ant.Type = BC: Biconical Antenna LP: Logperiodic Antenna **SH*: Horn Antenna

APPENDIX 3

Test Instruments

EMI test equipment

Test Name	Local ID	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Interval (Month)
CE	KJM-02	146432	Measure	TAJIMA	GL19-55	-	-	-
CE	SAT3-10	144960	Attenuator	JFW	50HF-003N	-	2021/08/16	12
CE	SCC-C9/C10/SRSE-03	145036	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-271(RF Selector)	2021/04/12	12
CE	SLS-03	145540	LISN	Rohde & Schwarz	ENV216	100513	2021/02/12	12
CE	SLS-05	145542	LISN	Rohde & Schwarz	ENV216	100516	2021/02/12	12
CE	SOS-24	191841	Humidity Indicator	CUSTOM. Inc	CTH-201	-	2020/10/01	12
CE	STM-09	146191	Terminator	TME	CT-01 BP	-	2020/12/07	12
CE	STR-08	150463	Test Receiver	Rohde & Schwarz	ESW44	101581	2020/12/02	12
CE	STS-03	146210	Digital Hitester	HIOKI E.E. CORPORATION	3805-50	80997823	2021/09/14	12
CE,RE	COTS-SEMI-5	170932	EMI Software	TSJ (Techno Science Japan)	TEPTO-DV3(RE,CE,ME,PE)	-	-	-
RE	SAEC-02(NSA)	145563	Semi-Anechoic Chamber	TDK	SAEC-02(NSA)	2	2021/03/16	12
RE	SAF-02	145004	Pre Amplifier	SONOMA	310N	290212	2021/02/10	12
RE	SAT3-11	150921	Attenuator	JFW	50HF-003N	-	2021/01/26	12
RE	SAT6-14	167095	Attenuator	JFW	50HF-006N	-	2021/02/10	12
RE	SBA-02	145022	Biconical Antenna	Schwarzbeck Mess-Elektronik OHG	BBA9106	91032665	2021/04/10	12
RE	SCC-B1/B3/B5/B7/B8/B13/SRSE-02	144975	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/NS4906	-/0901-270(RF Selector)	2021/04/12	12
RE	SCC-B2/B4/B6/B7/B8/B13/SRSE-02	144976	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/NS4906	-/0901-270(RF Selector)	2021/04/12	12
RE	SJM-20	207277	Measuring	ASKUL	-	-	-	-
RE	SLA-06	145528	Logperiodic Antenna	Schwarzbeck Mess-Elektronik OHG	VUSLP9111B	195	2021/04/10	12
RE	SOS-21	191838	Humidity Indicator	CUSTOM. Inc	CTH-201	-	2021/08/02	12
RE	STR-01	145790	Test Receiver	Rohde & Schwarz	ESU40	100093	2021/04/27	12
RE	STS-02	145793	Digital Hitester	HIOKI E.E. CORPORATION	3805-50	80997819	2021/04/28	12

*Hyphens for Last Calibration Date and Cal Int (month) are instruments that Calibration is not required (e.g. software), or instruments checked in advance before use.

The expiration date of the calibration is the end of the expired month.

As for some calibrations performed after the tested dates , those test equipment have been controlled by means of an unbroken chains of calibrations.

All equipment is calibrated with valid calibrations . Each measurement data is traceable to the national or international standards

Test Item:

CE: Conducted emission,

RE: Radiated emission

End of Report