

**APPENDIX 2: Data of EMI test**

**Conducted Emission**

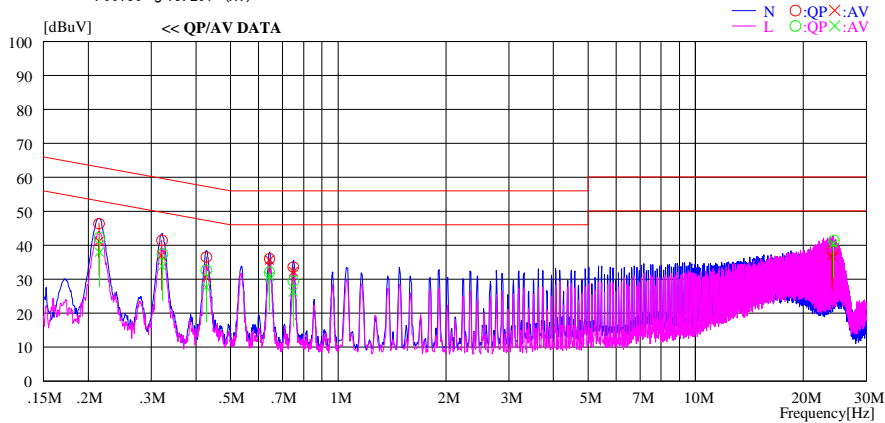
**DATA OF CONDUCTED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No. 3 Semi Anechoic Chamber  
 Date : 2006/06/23 17:01:18

Applicant : KEYENCE CORPORATION  
 Kind of EUT : Wireless Barcode Reader (Cradle)  
 Model No. : BL-N9UB  
 Serial No. : 5506300451  
 Report No. : 26IE0265-HO  
 Power : AC 120V / 60Hz  
 Temp./Humi. : 25deg. C / 62%  
 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting-Receiving

LIMIT : FCC15C § 15.207 (QP)  
 FCC15C § 15.207 (AV)



Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.21447	46.2	40.9	0.2	46.4	41.1	63.0	53.0	16.6	11.9	N	
0.32075	41.1	36.6	0.3	41.4	36.9	59.7	49.7	18.3	12.8	N	
0.42789	36.2	30.3	0.3	36.5	30.6	57.3	47.3	20.8	16.7	N	
0.64233	35.8	35.3	0.3	36.1	35.6	56.0	46.0	19.9	10.4	N	
0.74935	33.2	31.9	0.3	33.5	32.2	56.0	46.0	22.5	13.8	N	
24.08038	37.0	35.3	1.4	38.4	36.7	60.0	50.0	21.6	13.3	N	
0.21510	42.1	37.6	0.2	42.3	37.8	63.0	53.0	20.7	15.2	L	
0.32231	37.1	33.4	0.3	37.4	33.7	59.6	49.6	22.2	15.9	L	
0.42812	32.3	27.2	0.3	32.6	27.5	57.3	47.3	24.7	19.8	L	
0.64269	31.7	30.4	0.3	32.0	30.7	56.0	46.0	24.0	15.3	L	
0.74897	29.1	25.8	0.3	29.4	26.1	56.0	46.0	26.6	19.9	L	
24.29442	39.9	39.0	1.4	41.3	40.4	60.0	50.0	18.7	9.6	L	

CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C.F (L ISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

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MF060b(14.06.06)

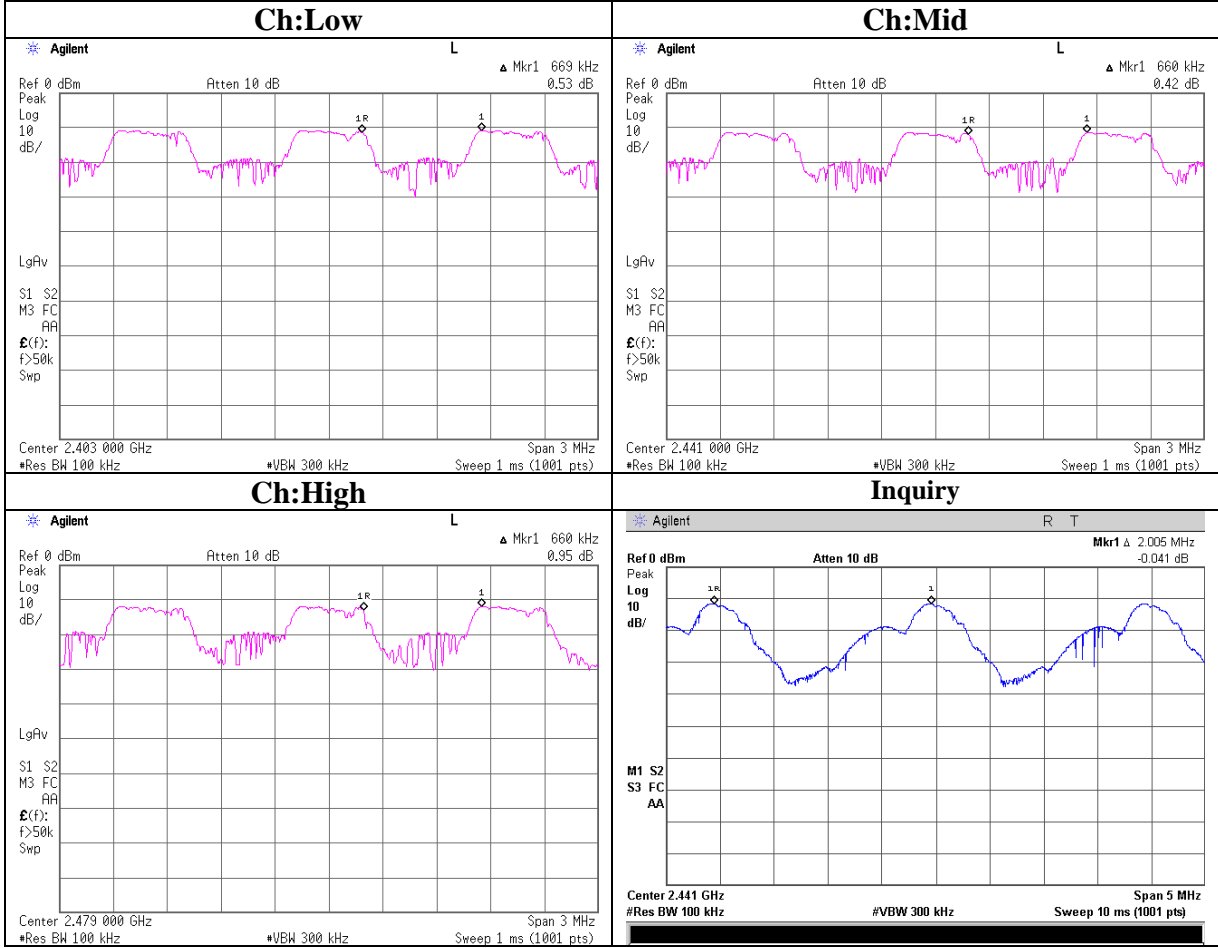
## Carrier Frequency Separation

UL Apex Co., Ltd.  
Head Office EMC Lab. No.3 Shielded Room

COMPANY	: KEYENCE CORPORATION	REGULATION	: FCC Part15 Subpart C 15.247(a)(1)
EQUIPMENT	: Wireless Barcode Reader (Cradle)	TEST DISTANCE	: -
MODEL	: BL-N9UB	DATE	: 08/29/2006, 08/30/2006
S/N	: 000ca702bb55	TEMPERATURE	: 26deg.C(8/29), 24deg.C(8/30)
POWER	: AC120V/60Hz	HUMIDITY	: 66%(8/29), 67%(8/30)
MODE	: Tx(Hopping on)/Inquiry	ENGINEER	: Hiroka Umeyama

Ch	Freq. [MHz]	Channel separation [MHz]	Limit
Low	2402.0	0.669	>0.584(two-thirds of 0.879 [MHz] (20dB Bandwidth) )
Mid	2441.0	0.660	>0.566(two-thirds of 0.846 [MHz] (20dB Bandwidth) )
High	2480.0	0.660	>0.630(two-thirds of 0.945[MHz] (20dB Bandwidth) )
Inquiry	2441.0	2.005	>0.738(two-thirds of 1.107 [MHz] (20dB Bandwidth) )

### Carrier Frequency Separation



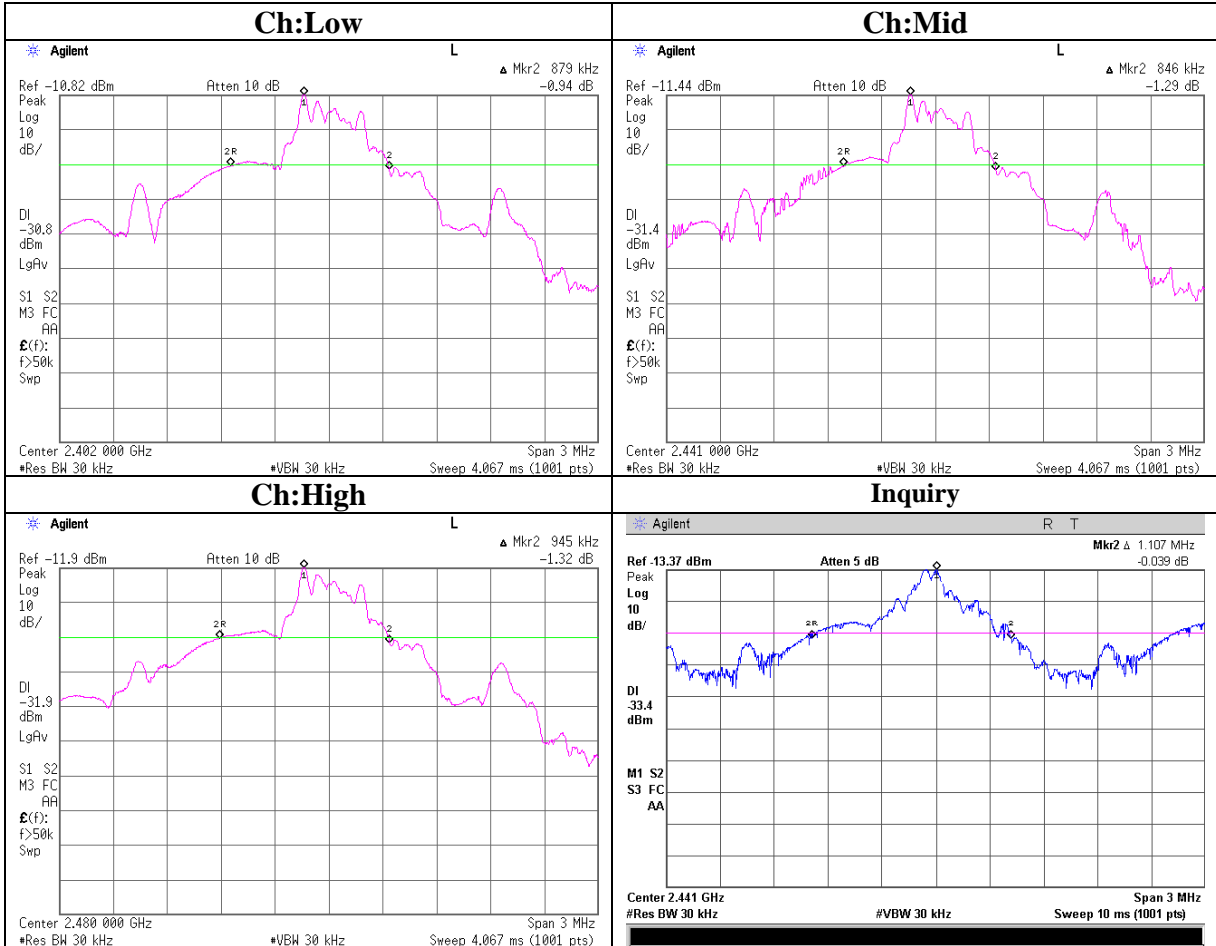
## 20dB Bandwidth

UL Apex Co., Ltd.  
Head Office EMC Lab. No.3 Shielded Room

COMPANY : KEYENCE CORPORATION REGULATION : FCC Part15 Subpart C 15.247(a)(1)  
EQUIPMENT : Wireless Barcode Reader (Cradle) TEST DISTANCE : -  
MODEL : BL-N9UB DATE : 08/29/2006, 08/30/2006  
S/ N : 000ca702bb55 TEMPERATURE : 26deg.C(8/29), 24deg.C(8/30)  
POWER : AC120V/60Hz HUMIDITY : 66% (8/29), 67% (8/30)  
MODE : Tx (Hopping off) /Inquiry ENGINEER : Hiroka Umeyama

Ch	Freq. [MHz]	20dB Bandwidth [MHz]	Limit [MHz]
Low	2402.0	0.879	-
Mid	2441.0	0.846	-
High	2480.0	0.945	-
Inquiry	2441.0	1.107	-

**20dB Bandwidth**



### Number of Hopping Frequency

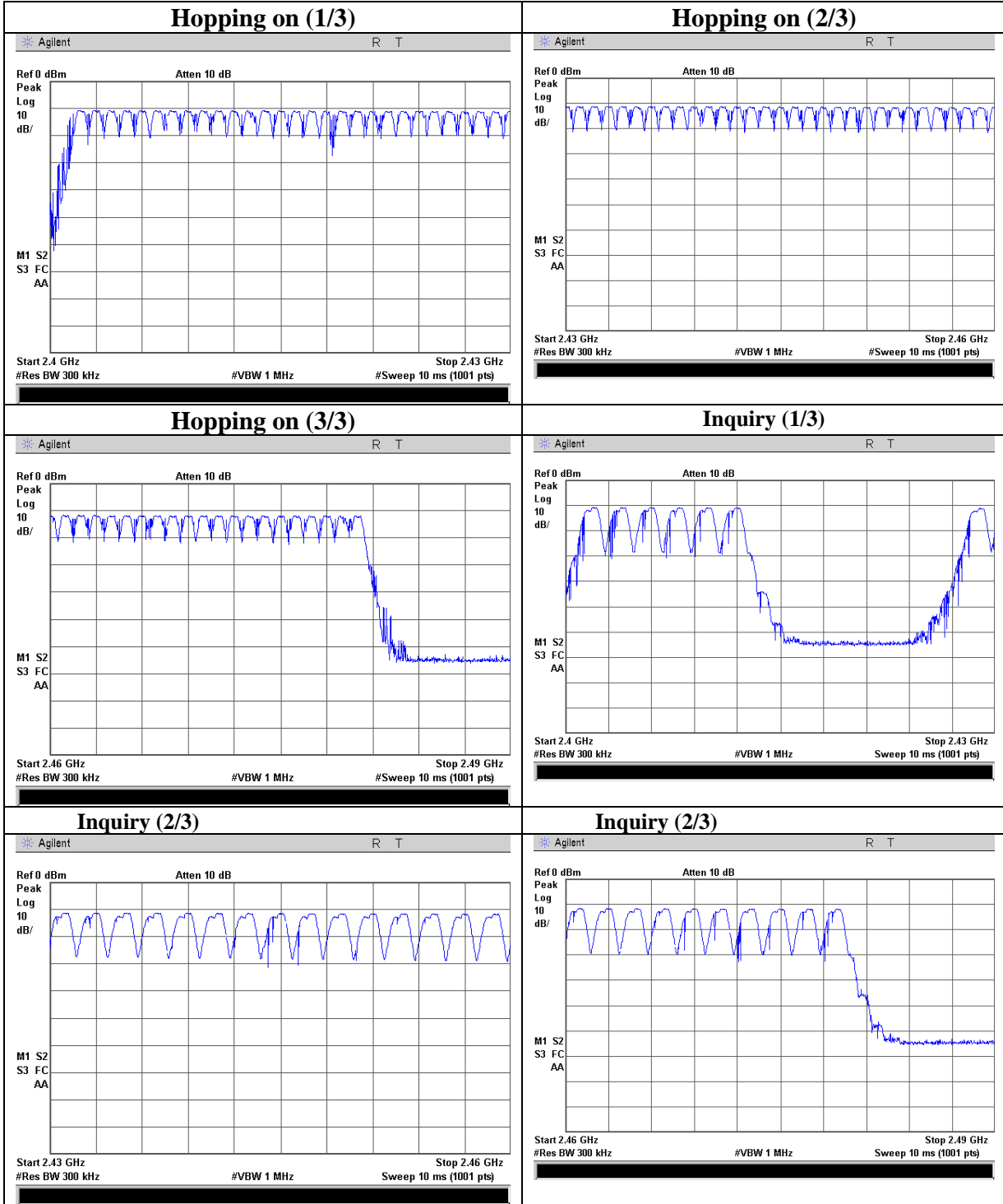
UL Apex Co., Ltd.  
Head Office EMC Lab. No.3 Shielded Room

COMPANY : KEYENCE CORPORATION REGULATION : FCC Part15 Subpart C 15.247(a)(1)(iii)  
EQUIPMENT : Wireless Barcode Reader (Cradle) TEST DISTANCE : -  
MODEL : BL-N9UB DATE : 08/29/2006  
S/ N : 000ca702bb55 TEMPERATURE : 26deg.C  
POWER : AC120V/60Hz HUMIDITY : 66%  
MODE : Tx (Hopping on) /Inquiry ENGINEER : Hiroka Umeyama

Mode	Number of channel [time]	Limit [time]
Tx(Hoppng on)	79	$\geq 15$

Mode	Number of channel [time]	Limit [time]
Inquiry	32	$\geq 15$

### Number of Hopping Frequency



### Dwell time

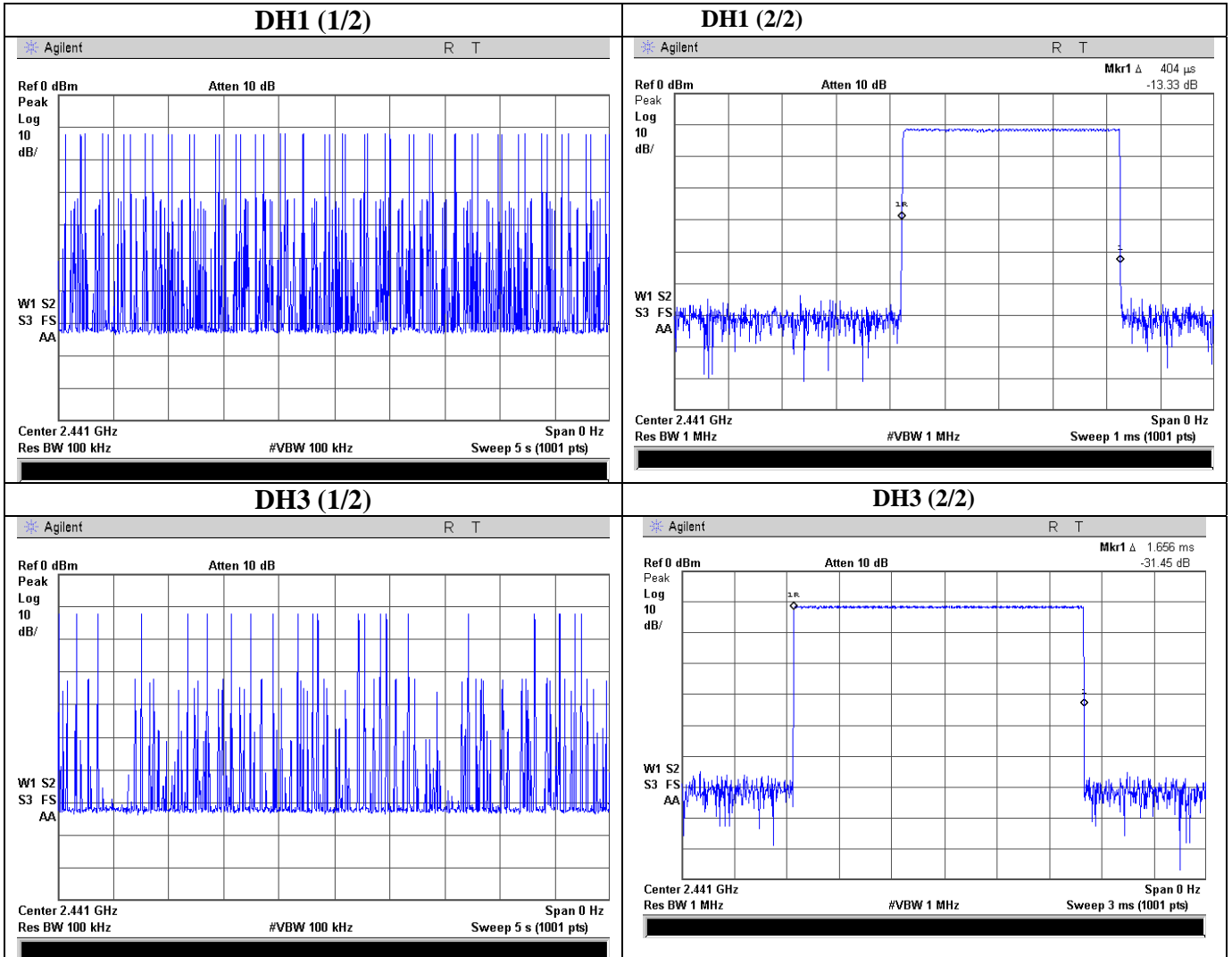
UL Apex Co., Ltd.  
Head Office EMC Lab. No.3 Shielded Room

COMPANY : KEYENCE CORPORATION REGULATION : FCC Part15 Subpart C 15.247(a)(1)(iii)  
EQUIPMENT : Wireless Barcode Reader (Cradle) TEST DISTANCE : -  
MODEL : BL-N9UB DATE : 08/29/2006  
S/N : 000ca702bb55 TEMPERATURE : 26deg.C  
POWER : AC120V/60Hz HUMIDITY : 66%  
MODE : Tx (Hopping on) /Inquiry ENGINEER : Hiroka Umeyama

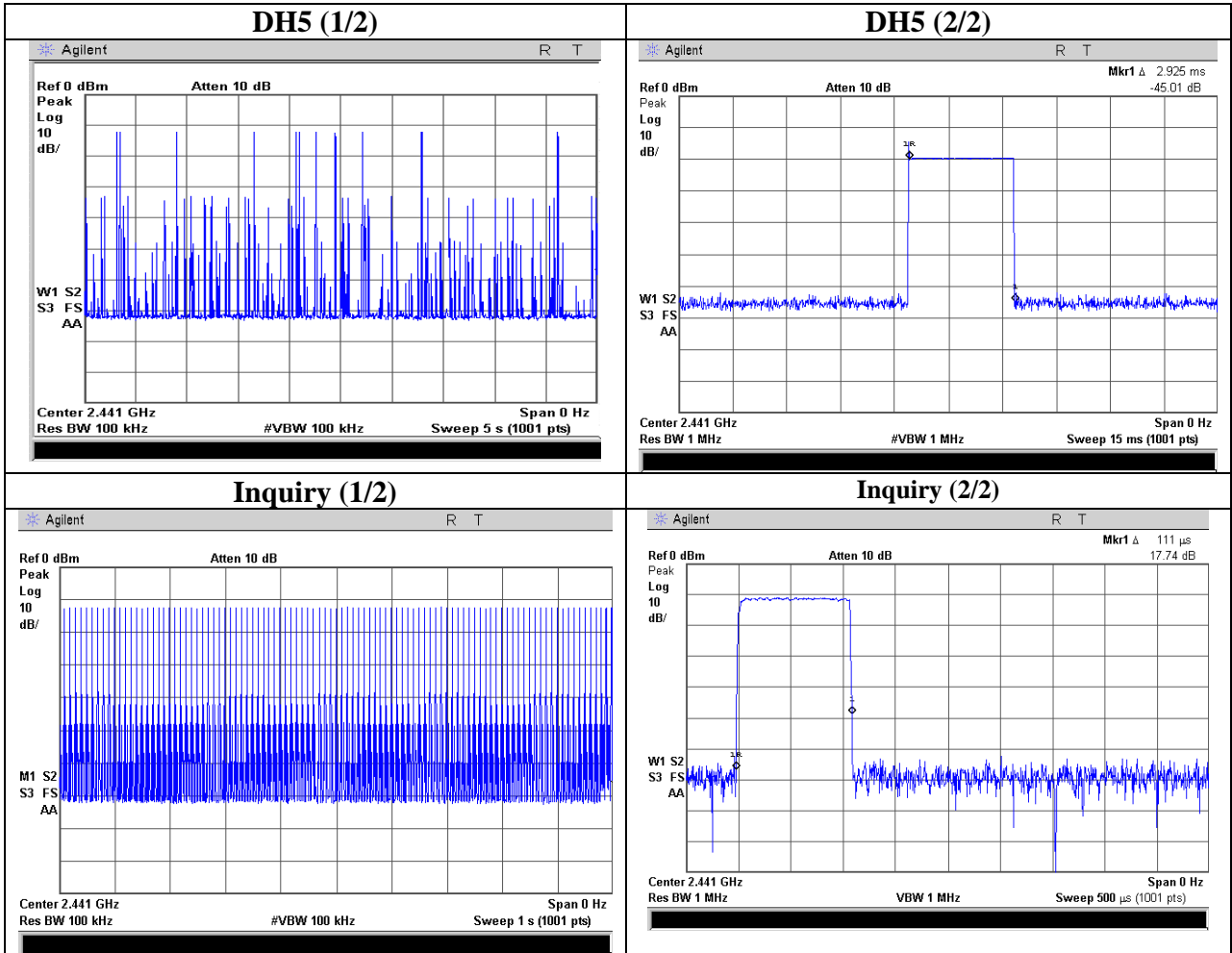
Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8(32 Hopping x 0.4)second period	Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	48 times / 5 sec. x 31.6 sec. = 303 times	0.404	123	400
DH3	22 times / 5 sec. x 31.6 sec. = 139 times	1.656	230	400
DH5	11 times / 5 sec. x 31.6 sec. = 70 times	2.925	203	400
Inquiry	100 times / 1 sec. x 12.8 sec. = 1280 times	0.111	142	400



**Dwell time**



**Dwell time**



### Maximum Peak Output Power

UL Apex Co., Ltd.  
Head Office EMC Lab. No.3 Shielded Room

COMPANY : KEYENCE CORPORATION      REGULATION : FCC Part15 Subpart C 15.247(b)(1)  
EQUIPMENT : Wireless Barcode Reader (Cradle)      TEST DISTANCE : -  
MODEL : BL-N9UB      DATE : 08/29/2006  
S/ N : 000ca702bb55      TEMPERATURE : 26deg.C  
POWER : AC120V/60Hz      HUMIDITY : 66%  
MODE : Tx(Hopping Off)/Inquiry      ENGINEER : Hiroka Umeyama

Ch	Freq. [MHz]	PM Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
Low	2402.0	-10.54	1.27	10.22	0.95	1.24	20.97	125	20.02
Mid	2441.0	-10.54	1.27	10.22	0.95	1.24	20.97	125	20.02
High	2480.0	-10.56	1.27	10.22	0.93	1.24	20.97	125	20.04
Inquiry	2441.0	-10.97	1.27	10.22	0.52	1.13	20.97	125	20.45

Sample Calculation:

Result = Reading + Cable Loss (supplied by customer)+ Attenuator

\* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.

**Radiated Spurious Emission(below 1GHz)**

\* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.  
 \* Each channel L/M/H has the same spurious emission level.

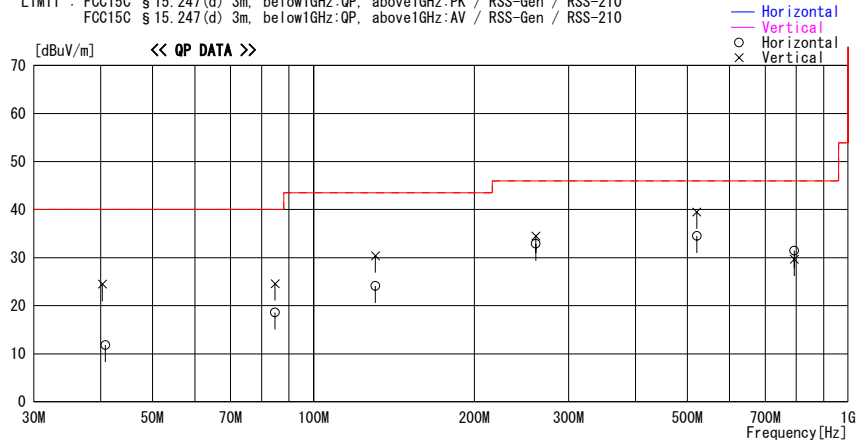
**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No. 3 Semi Anechoic Chamber  
 Date : 2006/08/28 11:52:10

Company : KEYENCE CORPORATION  
 Kind of EUT : Wireless Barcode Reader (Cradle)  
 Model No. : BL-N9UB  
 Serial No. : 5506300451  
 Report No. : 26IE0265-HO  
 Power : AC120V/60Hz  
 Temp./Humi. : 25deg. C. /60%  
 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting, Max-Axis

LIMIT : FCC15C § 15.247(d) 3m, below1GHz:QP, above1GHz:PK / RSS-Gen / RSS-210  
 FCC15C § 15.247(d) 3m, below1GHz:QP, above1GHz:AV / RSS-Gen / RSS-210



Frequency	Reading	DET	Antenna Factor	Loss & Gain	Level	Angle	Height	Polar.	Limit	Margin
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
40.300	35.3	QP	14.1	-24.9	24.5	246	100	Vert.	40.0	15.5
40.800	22.9	QP	13.8	-24.9	11.8	353	300	Hori.	40.0	28.2
84.780	34.8	QP	8.0	-24.2	18.6	222	204	Hori.	40.0	21.4
84.780	40.8	QP	8.0	-24.2	24.6	245	100	Vert.	40.0	15.4
130.575	33.3	QP	14.4	-23.6	24.1	231	155	Hori.	43.5	19.4
130.575	39.6	QP	14.4	-23.6	30.4	5	100	Vert.	43.5	13.1
260.570	36.8	QP	18.6	-22.5	32.9	150	142	Hori.	46.0	13.1
260.570	38.4	QP	18.6	-22.5	34.5	0	100	Vert.	46.0	11.5
521.140	36.7	QP	18.9	-21.1	34.5	247	100	Hori.	46.0	11.5
521.140	41.7	QP	18.9	-21.1	39.5	290	100	Vert.	46.0	6.5
793.000	29.0	QP	21.8	-19.3	31.5	186	100	Hori.	46.0	14.5
793.000	27.2	QP	21.8	-19.3	29.7	30	100	Vert.	46.0	16.3

CHART: WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
 CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - GAIN (AMP)

**Radiated Spurious Emission(below 1GHz)**

\* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

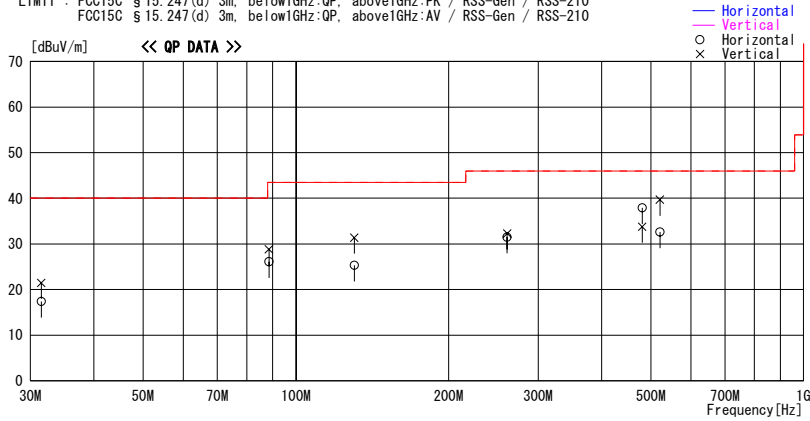
**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.3 Semi Anechoic Chamber  
 Date : 2006/08/29 09:51:34

Company : KEYENCE CORPORATION Report No. : 26IE0265-HO  
 Kind of EUT : Wireless Barcode Reader(Cradle) Power : AC120V/60Hz  
 Model No. : BL-N9UB Temp./Humi. : 25deg.C./66%  
 Serial No. : 5506300451 Operator : Hiroka Umeyama

Mode / Remarks : Recieving, Max-Axis

LIMIT : FCC15C §15.247(d) 3m, below1GHz:QP, above1GHz:PK / RSS-Gen / RSS-210  
 FCC15C §15.247(d) 3m, below1GHz:QP, above1GHz:AV / RSS-Gen / RSS-210



Frequency [MHz]	Reading [dBuV]	DET	Antenna	Loss&	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]
			Factor [dB]	Gain [dB]						
31.512	27.6	QP	19.0	-25.1	21.5	2	100	Vert.	40.0	18.5
31.512	23.5	QP	19.0	-25.1	17.4	130	217	Hori.	40.0	22.6
88.486	41.6	QP	8.6	-24.1	26.1	228	221	Hori.	43.5	17.4
88.486	44.3	QP	8.6	-24.1	28.8	252	100	Vert.	43.5	14.7
130.281	40.6	QP	14.4	-23.6	31.4	29	100	Vert.	43.5	12.1
130.281	34.5	QP	14.4	-23.6	25.3	233	126	Hori.	43.5	18.2
260.564	36.2	QP	18.6	-22.5	32.3	48	278	Vert.	46.0	13.7
260.564	35.4	QP	18.6	-22.5	31.5	172	191	Hori.	46.0	14.5
481.005	36.5	QP	18.6	-21.3	33.8	76	100	Vert.	46.0	12.2
481.005	40.6	QP	18.6	-21.3	37.9	214	100	Hori.	46.0	8.1
521.136	41.9	QP	18.9	-21.1	39.7	76	100	Vert.	46.0	6.3
521.136	34.8	QP	18.9	-21.1	32.6	147	121	Hori.	46.0	13.4

CHART: WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
 CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - GAIN (AMP)

**Radiated Spurious Emission(above 1GHz)**

UL Apex Co., Ltd.  
Head Office EMC Lab. No.3 Semi Anechoic Chambe

Company	: KEYENCE CORPORATION	REPORT NO	: 26IE0265-HO
Equipment	: Wireless Barcode Reader (Cradle)	REGULATION	: Fcc Part15 Subpart C 15.247(d)
Model	: BL-N9UB	TEST DISTANCE	: 3/1m
Sample No.	: 5506300451	DATE	: 08/28/2006
Power	: AC 120 V / 60 Hz	TEMPERATURE	: 25deg.C
Mode	: Transmitting 2402MHz	HUMIDITY	: 60%
Remarks	: Hor X , Ver Z-axis	ENGINEER	: Hiroka Umeyama

**PK DETECT** (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	2390.0	44.2	44.2	29.1	32.8	2.2	0.0	42.7	42.7	74.0	31.3	31.3
2	2400.0	79.6	78.7	29.1	32.8	2.2	0.0	78.1	77.2	74.0	-	-
3	4804.0	41.3	42.8	33.4	31.6	3.5	0.0	46.6	48.1	74.0	27.4	25.9
4	7206.0	43.4	44.1	37.3	32.1	4.3	0.0	52.9	53.6	74.0	21.1	20.4
5	9608.0	44.6	43.7	39.4	33.1	5.0	0.0	55.9	55.0	74.0	18.1	19.0
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>												
6	24020.0	46.3	47.0	39.1	31.6	8.1	0.0	52.4	53.1	74.0	21.6	20.9

**AV DETECT** (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	2390.0	30.0	30.0	29.1	32.8	2.2	0.0	28.5	28.5	54.0	25.5	25.5
2	2400.0	30.0	30.2	29.1	32.8	2.2	0.0	28.5	28.7	54.0	25.5	25.3
3	4804.0	29.3	28.8	33.4	31.6	3.5	0.0	34.6	34.1	54.0	19.4	19.9
4	7206.0	30.7	30.2	37.3	32.1	4.3	0.0	40.2	39.7	54.0	13.8	14.3
5	9608.0	30.3	30.5	39.4	33.1	5.0	0.0	41.6	41.8	54.0	12.4	12.2
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>												
6	24020.0	32.3	32.3	39.1	31.6	8.1	0.0	38.4	38.4	54.0	15.6	15.6

\* Reference data

**20dBc(Fundamental 2402MHz)** (RBW: 100kHz, VBW: 300kHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit 20dBc [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	2402.0	98.1	96.5	29.1	32.8	2.2	0.0	96.6	95.0	-	-	-
2	2400.0	63.4	62.6	29.1	32.8	2.2	0.0	61.9	61.1	Funda-20dB	14.7	13.9

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.5dB

\*Except for the above table : All other spurious emissions were less than 20dB for the limit.

\*In the frequency over the fifth harmonic, the noise from the EUT was not seen.The data above is its base noise.

\*The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

\*Hi-Pass Fiter was not used for factor 0.0dB of the above table.

**Radiated Spurious Emission(above 1GHz)**

UL Apex Co., Ltd.  
Head Office EMC Lab. No.3 Semi Anechoic Chamber

Company	: KEYENCE CORPORATION	REPORT NO	: 26IE0265-HO
Equipment	: Wireless Barcode Reader (Cradle)	REGULATION	: Fcc Part15 Subpart C 15.247(d)
Model	: BL-N9UB	TEST DISTANCE	: 3/1m
Sample No.	: 5506300451	DATE	: 08/28/2006
Power	: AC 120 V / 60 Hz	TEMPERATURE	: 25deg.C
Mode	: Transmitting 2441MHz	HUMIDITY	: 60%
Remarks	: Hor X , Ver Z-axis	ENGINEER	: Hiroka Umeyama

**PK DETECT** (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	4882.0	42.3	42.6	33.6	31.6	3.5	0.0	47.8	48.1	74.0	26.2	25.9
2	7323.0	44.6	43.3	37.4	32.2	4.3	0.0	54.1	52.8	74.0	19.9	21.2
3	9764.0	43.8	43.8	39.6	33.2	5.0	0.0	55.2	55.2	74.0	18.8	18.8
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>												
4	24410.0	46.2	47.0	39.1	31.1	8.2	0.0	52.9	53.7	74.0	21.1	20.3

**AV DETECT** (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	4882.0	28.8	28.8	33.6	31.6	3.5	0.0	34.3	34.3	54.0	19.7	19.7
2	7323.0	30.2	30.2	37.4	32.2	4.3	0.0	39.7	39.7	54.0	14.3	14.3
3	9764.0	30.0	30.0	39.6	33.2	5.0	0.0	41.4	41.4	54.0	12.6	12.6
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>												
4	24410.0	31.5	31.5	39.1	31.1	8.2	0.0	38.2	38.2	54.0	15.8	15.8

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.5dB

\*Except for the above table : All other spurious emissions were less than 20dB for the limit.

\*In the frequency over the fifth harmonic, the noise from the EUT was not seen.The data above is its base noise.

\*The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

\*Hi-Pass Fiter was not used for factor 0.0dB of the above table.

**Radiated Spurious Emission(above 1GHz)**

UL Apex Co., Ltd.  
 Head Office EMC Lab. No.3 Semi Anechoic Chamber

Company	: KEYENCE CORPORATION	REPORT NO	: 26IE0265-HO
Equipment	: Wireless Barcode Reader (Cradle)	REGULATION	: Fcc Part15 Subpart C 15.247(d)
Model	: BL-N9UB	TEST DISTANCE	: 3/1m
Sample No.	: 5506300451	DATE	: 08/28/2006
Power	: AC 120 V / 60 Hz	TEMPERATURE	: 25deg.C
Mode	: Transmitting 2480MHz	HUMIDITY	: 60%
Remarks	: Hor X , Ver Z-axis	ENGINEER	: Hiroka Umeyama

**PK DETECT** (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR [dBuV]	VER					HOR [dBuV/m]	VER		HOR [dB]	VER
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	2483.5	44.1	48.2	29.2	32.7	2.3	0.0	42.9	47.0	74.0	31.1	27.0
2	4960.0	42.5	42.9	33.7	31.6	3.5	0.0	48.1	48.5	74.0	25.9	25.5
3	7440.0	43.5	42.3	37.6	32.3	4.3	0.0	53.1	51.9	74.0	20.9	22.1
4	9920.0	43.3	44.0	39.8	33.2	5.1	0.0	55.0	55.7	74.0	19.0	18.3
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>												
5	24800.0	46.2	46.1	39.3	30.6	8.3	0.0	53.7	53.6	74.0	20.3	20.4

**AV DETECT** (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR [dBuV]	VER					HOR [dBuV/m]	VER		HOR [dB]	VER
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	2483.5	30.0	29.9	29.2	32.7	2.3	0.0	28.8	28.7	54.0	25.2	25.3
2	4960.0	28.6	28.7	33.7	31.6	3.5	0.0	34.2	34.3	54.0	19.8	19.7
3	7440.0	30.0	30.1	37.6	32.3	4.3	0.0	39.6	39.7	54.0	14.4	14.3
4	9920.0	30.2	30.2	39.8	33.2	5.1	0.0	41.9	41.9	54.0	12.1	12.1
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>												
5	24800.0	31.9	31.9	39.3	30.6	8.3	0.0	39.4	39.4	54.0	14.6	14.6

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.5dB

\*Except for the above table : All other spurious emissions were less than 20dB for the limit.

\*In the frequency over the fifth harmonic, the noise from the EUT was not seen.The data above is its base noise.

\*The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

\*Hi-Pass Fiter was not used for factor 0.0dB of the above table.



**Radiated Spurious Emission(above 1GHz)**

UL Apex Co., Ltd.  
 Head Office EMC Lab. No.3 Semi Anechoic Chamber

Company	: KEYENCE CORPORATION	REPORT NO	: 26IE0265-HO
Equipment	: Wireless Barcode Reader (Cradle)	REGULATION	: Fcc Part15 Subpart B / RSS-210 / RSS-Gen
Model	: BL-N9UB	TEST DISTANCE	: 3m
Sample No.	: 5506300451	DATE	: 08/28/2006
Power	: AC 120 V / 60 Hz	TEMPERATURE	: 25deg.C
Mode	: Receiving	HUMIDITY	: 60%
Remarks	: Hor X , Ver Z-axis	ENGINEER	: Hiroka Umeyama

**PK DETECT** (RBW: 1MHz, VBW: 1MHz)

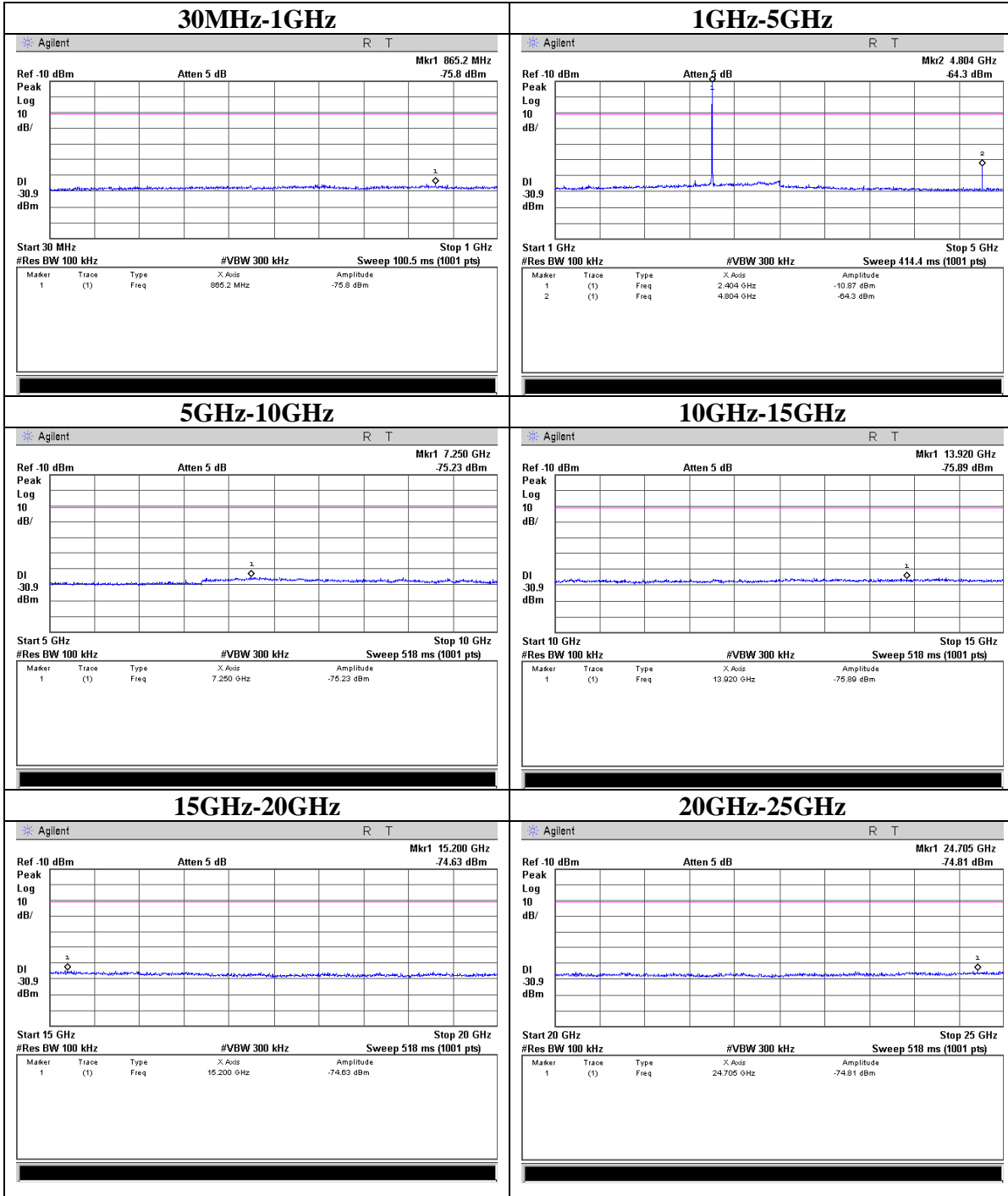
No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	1823.9	49.0	46.2	27.8	33.3	2.0	0.0	45.5	42.7	74.0	28.5	31.3
2	2412.0	60.0	58.0	29.1	32.8	2.2	0.0	58.5	56.5	74.0	15.5	17.5

**AV DETECT** (RBW: 1MHz, VBW: 10Hz)

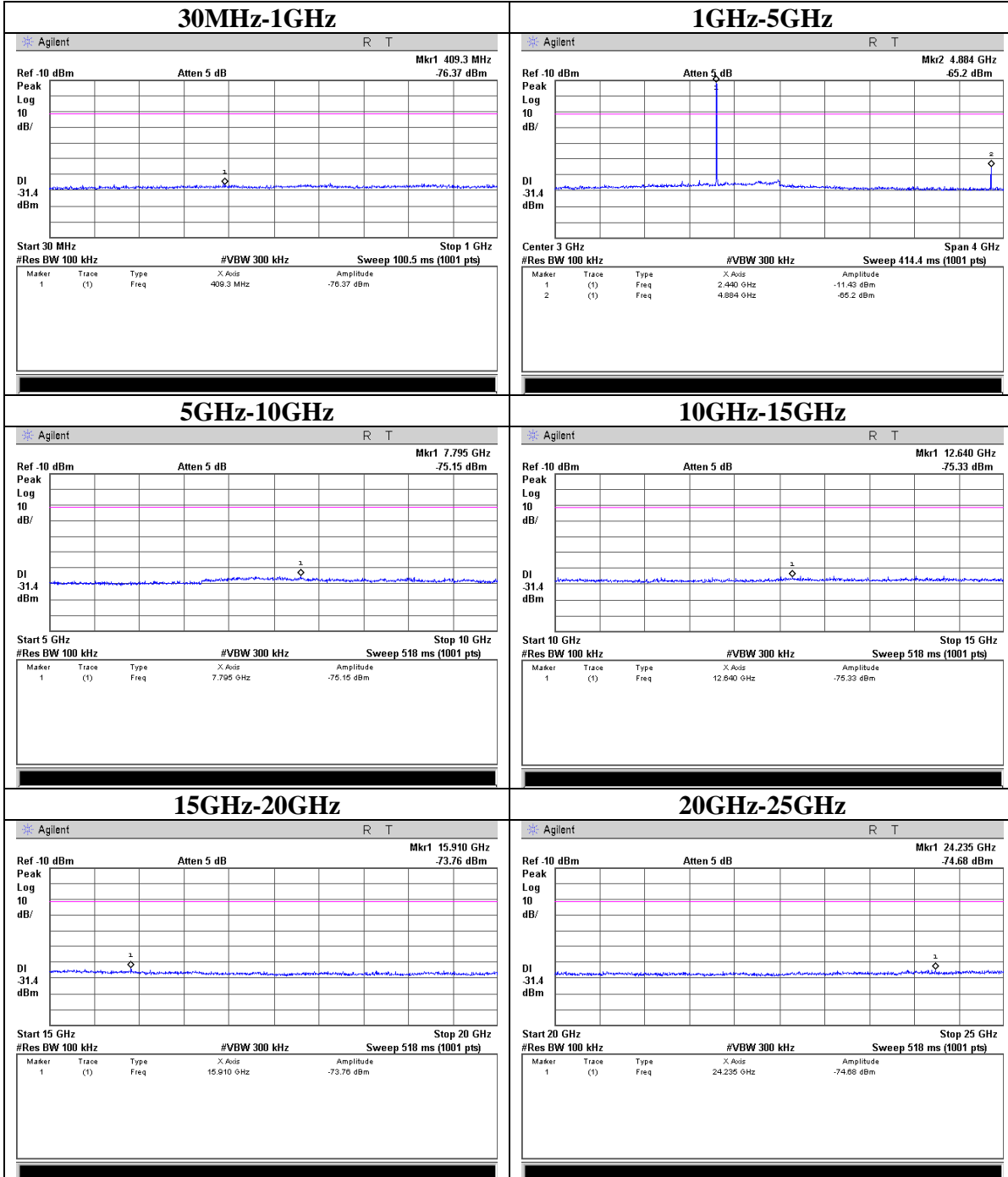
No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	1823.9	37.2	33.8	27.8	33.3	2.0	0.0	33.7	30.3	54.0	20.3	23.7
2	2412.0	30.5	30.3	29.1	32.8	2.2	0.0	29.0	28.8	54.0	25.0	25.2

\*Except for the above table : All other spurious emissions were less than 20dB for the limit.  
 \*In the frequency over the fifth harmonic, the noise from the EUT was not seen.The data above is its base noise.  
 \*The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.  
 \*Hi-Pass Fiter was not used for factor 0.0dB of the above table.

**Conducted Spurious Emission**  
**Ch:Low**



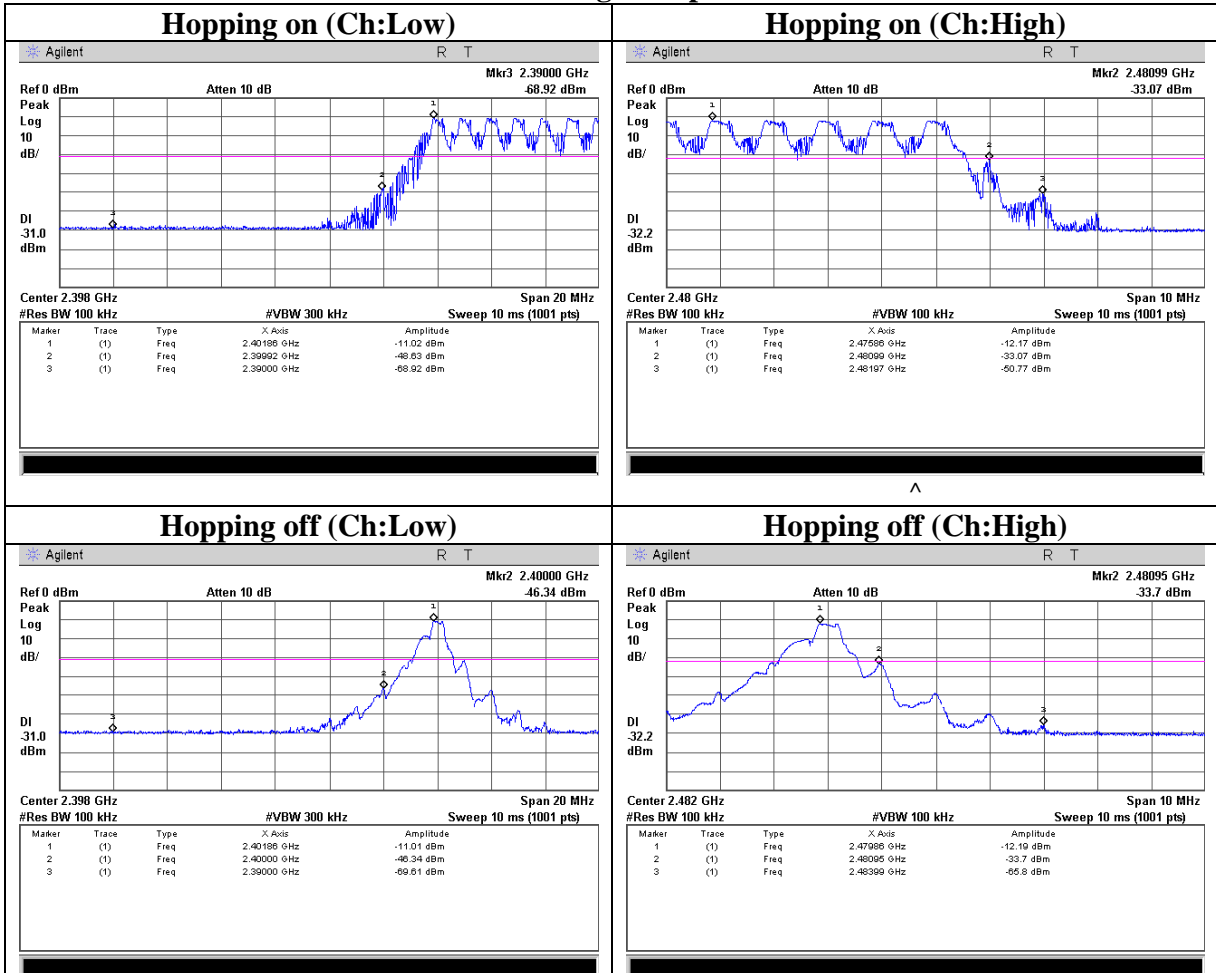
**Conducted Spurious Emission**  
**Ch:Mid**



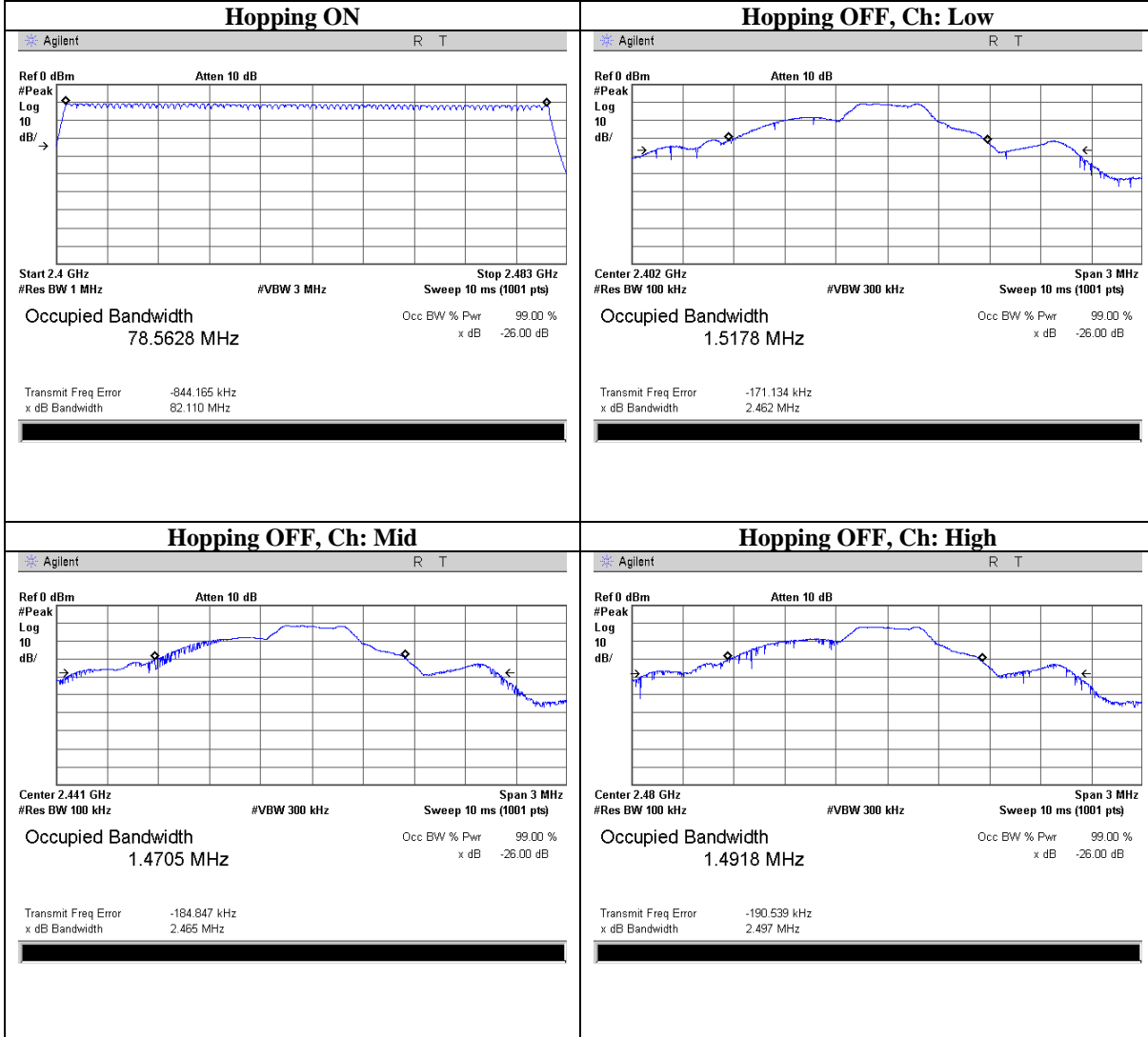
**Conducted Spurious Emission**  
**Ch:High**



**Conducted Spurious Emission**  
**Band Edge compliance**



### 99% Occupied Bandwidth



## APPENDIX 3:Test instruments

### EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-03	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE/CE	2006/03/03 * 12
MOS-12	Thermo-Hygrometer	Custom	CTH-180	RE/CE/AT	2006/01/19 * 24
MSTW-14	EMI measurement program	TSJ	TEPTO-DV	RE/CE	-
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	RE	2006/01/29 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2006/01/29 * 12
MCC-51	Coaxial cable	UL Apex	-	RE/CE	2006/03/11 * 12
MAT-30	Attenuator(6dB)	TME	UFA-01	RE	2006/03/11 * 12
MPA-13	Pre Amplifier	SONOA INSTRUMENT	310	RE	2006/03/25 * 12
TR-07	Test Receiver	Rohde & Schwarz	ESCS30	RE/CE	2005/09/14 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	RE/AT	2006/06/02 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	RE	2006/04/06 * 12
MCC-56	Microwave Cable	Suhner	SUCOFLEX104	RE	2006/04/15 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	RE	2006/03/27 * 12
MHA-02	Horn Antenna	EMCO	3160-09	RE	2006/01/09 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	CE(AE)	2006/02/06 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	CE(EUT)	2006/02/06 * 12
MTA-04	Terminator	MCL	NTRM-50	CE	2006/02/06 * 12
MSA-06	Spectrum Analyzer	Agilent	E4407B	AT	2006/05/24 * 12
MAT-25	Attenuator(10dB)(above1GHz)	Agilent	8493C	AT	2006/06/02 * 12
MRENT-35	Power Meter	Anritsu	ML2496A	AT	2006/04/25 * 12
MRENT-34	Power sensor	Anritsu	MA2411B	AT	2006/04/25 * 12
MOS-04	Digital Humidity Indicator	N.T	NT-1800	AT	2004/11/25 * 24

All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

#### Test Item:

- RE: Radiated Spurious Emission
- CE: Conducted Emission
- AT: Antenna Terminal Conducted test

**UL Apex Co., Ltd.**

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