

# DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room  
Date : 2011/02/28

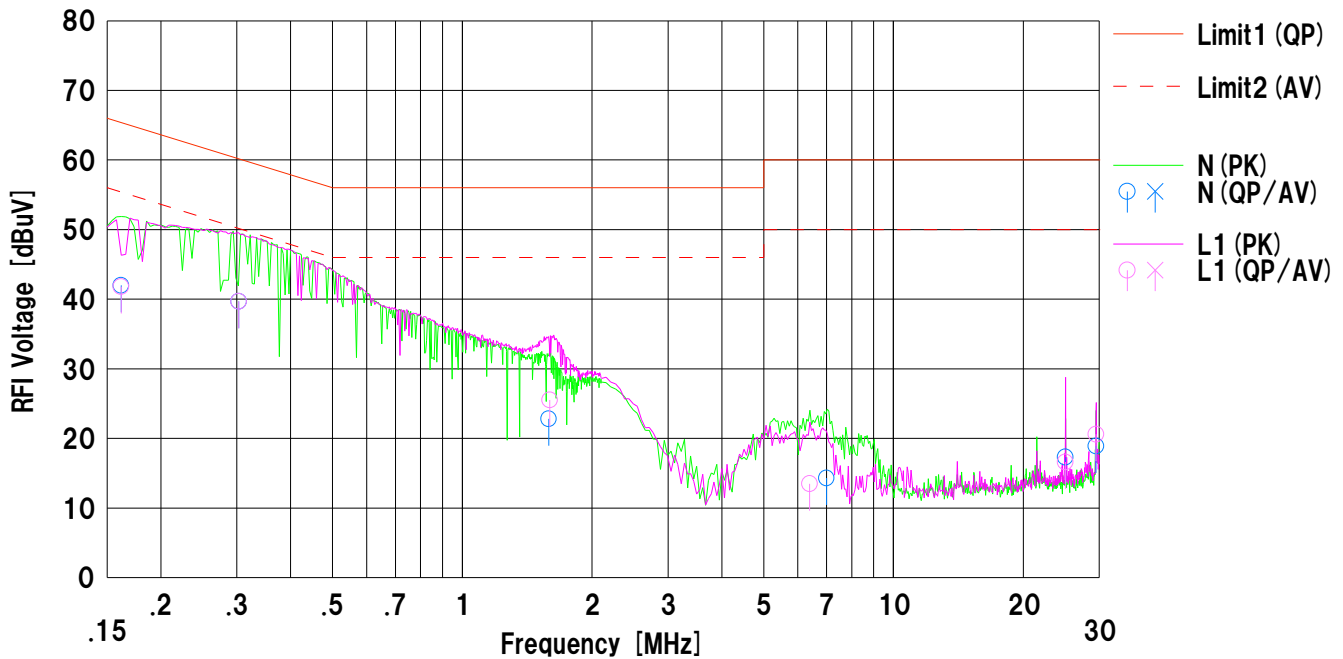
Company : SMK Corporation  
 Kind of EUT : Half-Mini Card size TransferJet module  
 Model No. : TJ101  
 Serial No. : 030

Mode : Transmitting  
 Report No. : 31EE0216-SH-01-A  
 Power : AC120V/60Hz Single phase  
 Temp./Humi. : 21deg.C / 31% RH

Remarks : -

Limit1 : FCC 15C (15.207) QP  
 Limit2 : FCC 15C (15.207) AV

Engineer : Hikaru Shirasawa



No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.16172	28.2	---	13.8	42.0	---	65.3	55.3	23.3	---	N	
2	0.30321	26.8	---	12.9	39.7	---	60.1	50.1	20.4	---	N	
3	1.58594	10.1	---	12.7	22.8	---	56.0	46.0	33.2	---	N	
4	6.99357	1.3	---	13.0	14.3	---	60.0	50.0	45.7	---	N	
5	25.06196	3.1	---	14.2	17.3	---	60.0	50.0	42.7	---	N	
6	29.49870	4.3	---	14.6	18.9	---	60.0	50.0	41.1	---	N	
7	0.16172	28.2	---	13.6	41.8	---	65.3	55.3	23.5	---	L1	
8	0.30321	26.8	---	12.9	39.7	---	60.1	50.1	20.4	---	L1	
9	1.59641	12.8	---	12.7	25.5	---	56.0	46.0	30.5	---	L1	
10	6.39649	0.5	---	13.0	13.5	---	60.0	50.0	46.5	---	L1	
11	25.06497	2.4	---	14.2	16.6	---	60.0	50.0	43.4	---	L1	
12	29.49870	6.0	---	14.6	20.6	---	60.0	50.0	39.4	---	L1	

Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]  
 LISN Control No.:

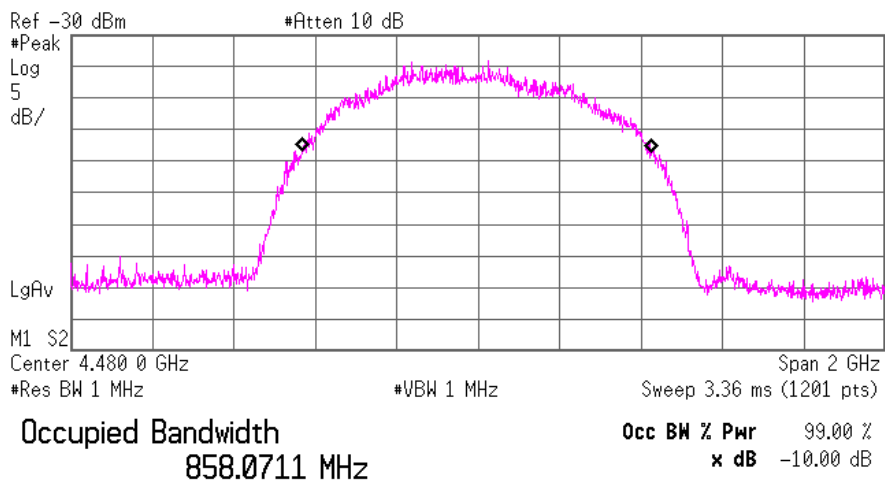
## Bandwidth (Regulation: FCC 15.503(d) 519(b))

**COMPANY** : SMK Corporation  
**Equipment** : Half-Mini Card size TransferJet module  
**MODEL NUMBER**: TJ101  
**SERIAL NUMBER**: 030  
**POWER** : DC3.3V  
**Remarks** : -

**UL Japan, Inc. SHONAN No.6 Shield Room**  
**REPORT No.** : 31EE216-SH-01-A  
**REGULATION** : FCC Part15SubpartF 503(d) 519(b)  
**DATE** : 2011/2/16  
**TEMP./HUMI** : 25deg.C/41% RH  
**TEST MODE** : Transmitting  
**ENGINEER** : Tatsuya Arai

**10dB Bandwidth: 770.3MHz (LIMIT: >500MHz)**  
**Occupied Bandwidth (99%) : 858.1MHz**

✧ Agilent



**Transmit Freq Error** -3.886 MHz  
**x dB Bandwidth** 770.296 MHz

**Start Frequency: 3480MHz**  
**Stop Frequency: 5480MHz**

## DATA OF RADIATION TEST (Regulation: FCC 15.519(c))

UL Japan, Inc.  
SHONAN NO.3 ANECHOIC CHAMBER  
Report No. : 31EE216-SH-01-A

Company : SMK Corporation  
Equipment : Half-Mini Card size TransferJet module  
Model : TJ101  
Sample No. : 030  
Power : DC3.3V  
Mode : Transmitting

Regulation : FCC Part15F Section 15.519(c)  
Test Distance : 0.5m / 0.3m / 0.1m  
Date : 2011/2/15  
Temperature : 20deg.C  
Humidity : 21% RH  
ENGINEER : Tatsuya Arai

### **Horizontal (RBW: 1MHz)**

No.	FREQ [MHz]	READING [dBuV]	ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	Distance Factor [dB]	RESULT		LIMIT [dBm]	MARGIN [dB]	Detector
							3m [dBuV/m]	EIRP [dBm]			
1	1560.00	47.2	25.3	40.1	1.6	15.6	18.4	-76.8	-75.3	1.5	RMS
2	1680.04	45.9	25.8	40.2	1.6	15.6	17.5	-77.7	-63.3	14.4	RMS
3	2740.04	50.2	28.2	40.5	2.1	15.6	24.4	-70.8	-61.3	9.5	RMS
4	3200.04	45.7	29.2	41.1	2.3	15.6	20.5	-74.7	-61.3	13.4	RMS
5	4480.00	42.7	30.7	40.4	2.8	15.6	20.2	-75.0	-41.3	33.7	RMS
6	7670.00	36.0	37.3	38.6	3.7	15.6	22.8	-72.4	-41.3	31.1	RMS
7	10225.00	34.4	39.2	37.5	4.2	15.6	24.7	-70.5	-41.3	29.2	RMS
8	14085.00	35.8	40.8	37.7	5.0	20.0	23.9	-71.3	-41.3	30.0	RMS
9	17920.00	36.2	48.1	37.3	5.6	29.5	23.1	-72.1	-61.3	10.8	RMS

No1-7: 0.5m, No.8: 0.3m, No.9: 0.1m

### **Vertical (RBW: 1MHz)**

No.	FREQ [MHz]	READING [dBuV]	ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	Distance Factor [dB]	RESULT		LIMIT [dBm]	MARGIN [dB]	Detector
							3m [dBuV/m]	EIRP [dBm]			
1	1040.00	47.2	23.7	39.9	1.3	15.6	16.7	-78.5	-75.3	3.2	RMS
2	1959.96	43.2	27.0	40.4	1.8	15.6	16.0	-79.2	-63.3	15.9	RMS
3	2739.94	46.8	28.2	40.5	2.1	15.6	21.0	-74.2	-61.3	12.9	RMS
4	3360.01	44.4	29.4	41.2	2.4	15.6	19.4	-75.8	-41.3	34.5	RMS
5	4480.00	43.6	30.7	40.4	2.8	15.6	21.1	-74.1	-41.3	32.8	RMS
6	7669.17	36.2	37.3	38.6	3.7	15.6	23.8	-71.4	-41.3	30.1	RMS
7	10224.87	34.3	39.2	37.5	4.2	15.6	24.6	-70.6	-41.3	29.3	RMS
8	14085.00	35.7	40.8	37.7	5.0	20.0	23.8	-71.4	-61.3	10.1	RMS
9	17920.00	35.9	48.1	37.3	5.6	29.5	22.8	-72.4	-61.3	11.1	RMS

No1-7: 0.5m, No.8: 0.3m, No.9: 0.1m

Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + Loss (Cable + ATT) - Distance Factor

Distance Factor calculation 0.5m:  $20 \cdot \log(3.0[m]/0.5[m]) = 15.6[\text{dB}]$

0.3m:  $20 \cdot \log(3.0[m]/0.3[m]) = 20.0[\text{dB}]$

0.1m:  $20 \cdot \log(3.0[m]/0.1[m]) = 29.5[\text{dB}]$

RESULT (EIRP) = RESULT (3m field strength) - 95.2

## DATA OF RADIATION TEST (Regulation: FCC 15.519(c))

UL Japan, Inc.  
 SHONAN NO.3 ANECHOIC CHAMBER  
 Report No. : 31EE216-SH-01-A

Company : SMK Corporation  
 Equipment : Half-Mini Card size TransferJet module  
 Model : TJ101  
 Sample No. : 030  
 Power : DC3.3V  
 Mode : Transmitting

Regulation : FCC Part15F Section 15.519(c)  
 Test Distance : 3m  
 Date : 2011/2/17  
 Temperature : 20deg.C  
 Humidity : 21% RH  
 ENGINEER : Tatsuya Arai

### Emissions from digital circuitry (limits in Section 15.209)

#### *Horizontal*

No.	FREQ [MHz]	READING [dBuV]	ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	Distance Factor [dB]	RESULT 3m [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	Detector
1	539.99	41.3	17.6	32.0	9.4	0.0	36.3	46.0	9.7	QP
2	559.99	40.2	17.8	32.0	9.5	0.0	35.5	46.0	10.5	QP
3	579.99	39.5	18.0	31.9	9.6	0.0	35.2	46.0	10.8	QP
4	619.99	44.0	18.6	31.9	9.7	0.0	40.4	46.0	5.6	QP
5	659.99	39.6	19.2	31.9	9.9	0.0	36.8	46.0	9.2	QP
6	839.99	34.5	20.4	31.4	10.5	0.0	34.0	46.0	12.0	QP

#### *Vertical*

No.	FREQ [MHz]	READING [dBuV]	ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	Distance Factor [dB]	RESULT 3m [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	Detector
1	279.99	35.5	18.3	32.0	8.3	0.0	30.1	46.0	15.9	QP
2	379.99	44.0	15.5	31.9	8.8	0.0	36.4	46.0	9.6	QP
3	479.99	37.3	16.9	31.9	9.2	0.0	31.5	46.0	14.5	QP
4	499.99	44.0	17.2	31.9	9.3	0.0	38.6	46.0	7.4	QP
5	539.99	44.6	17.6	32.0	9.4	0.0	39.6	46.0	6.4	QP
6	559.99	43.5	17.8	32.0	9.5	0.0	38.8	46.0	7.2	QP
7	579.99	44.1	18.0	31.9	9.6	0.0	39.8	46.0	6.2	QP

## DATA OF RADIATION TEST (Regulation: FCC 15.519(d))

UL Japan, Inc.  
SHONAN NO.3 ANECHOIC CHAMBER  
Report No. : 31EE216-SH-01-A

Company : SMK Corporation  
Equipment : Half-Mini Card size TransferJet module  
Model : TJ101  
Sample No. : 030  
Power : DC3.3V  
Mode : Transmitting

Regulation : FCC Part15F Section 15.519(d)  
Test Distance : 0.5m  
Date : 2011/2/27  
Temperature : 21deg.C  
Humidity : 31% RH

ENGINEER : Tatsuya Arai

### *Horizontal (RBW: 1kHz)*

No.	FREQ [MHz]	READING [dBuV]	ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	Distance Factor [dB]	RESULT		LIMIT [dBuV/m]	MARGIN [dB]	Detector
							3m [dBuV/m]	EIRP [dBm]			
1	1239.55	16.2	24.3	40.0	1.4	15.6	-13.7	-108.9	-85.3	23.6	RMS
2	1609.80	16.3	25.5	40.1	1.6	15.6	-12.3	-107.5	-85.3	22.2	RMS

### *Vertical (RBW: 1kHz)*

No.	FREQ [MHz]	READING [dBuV]	ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	Distance Factor [dB]	RESULT		LIMIT [dBuV/m]	MARGIN [dB]	Detector
							3m [dBuV/m]	EIRP [dBm]			
1	1239.55	15.4	24.3	40.0	1.4	15.6	-14.5	-109.7	-85.3	24.4	RMS
2	1609.80	17.0	25.5	40.1	1.6	15.6	-11.6	-106.8	-85.3	21.5	RMS

Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + Loss (Cable + ATT) - Distance Factor

Distance Factor calculation:  $20 \cdot \log(3.0[m]/0.5[m]) = 15.6[dB]$

RESULT (EIRP) = RESULT (3m field strength) - 95.2

## DATA OF RADIATION TEST (Regulation: FCC 15.519(e))

UL Japan, Inc.  
SHONAN NO.3 ANECHOIC CHAMBER  
Report No. : 31EE216-SH-01-A

Company : SMK Corporation  
Equipment : Half-Mini Card size TransferJet module  
Model : TJ101  
Sample No. : 030  
Power : DC3.3V  
Mode : Transmitting

Regulation : FCC Part15F Section 15.519(e)  
Test Distance : 0.5m  
Date : 2011/2/16  
Temperature : 20deg.C  
Humidity : 21% RH

ENGINEER : Tatsuya Arai

### *Horizontal (RBW: 3MHz)*

No.	FREQ [MHz]	READING [dBuV]	ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	Distance Factor [dB]	RESULT		LIMIT EIRP [dBm]	MARGIN [dB]	Detector
							3m [dBuV/m]	EIRP [dBm]			
1	4480.00	57.7	30.7	40.4	2.8	15.6	35.2	-35.5	0.0	35.5	Peak

### *Vertical (RBW: 3MHz)*

No.	FREQ [MHz]	READING [dBuV]	ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	Distance Factor [dB]	RESULT		LIMIT EIRP [dBm]	MARGIN [dB]	Detector
							3m [dBuV/m]	EIRP [dBm]			
1	4433.00	55.5	30.7	40.4	2.7	15.6	32.9	-37.8	0.0	37.8	Peak

Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + Loss (Cable + ATT) - Distance Factor

Distance Factor calculation:  $20 \cdot \log(3.0[m]/0.5[m]) = 15.6[dB]$

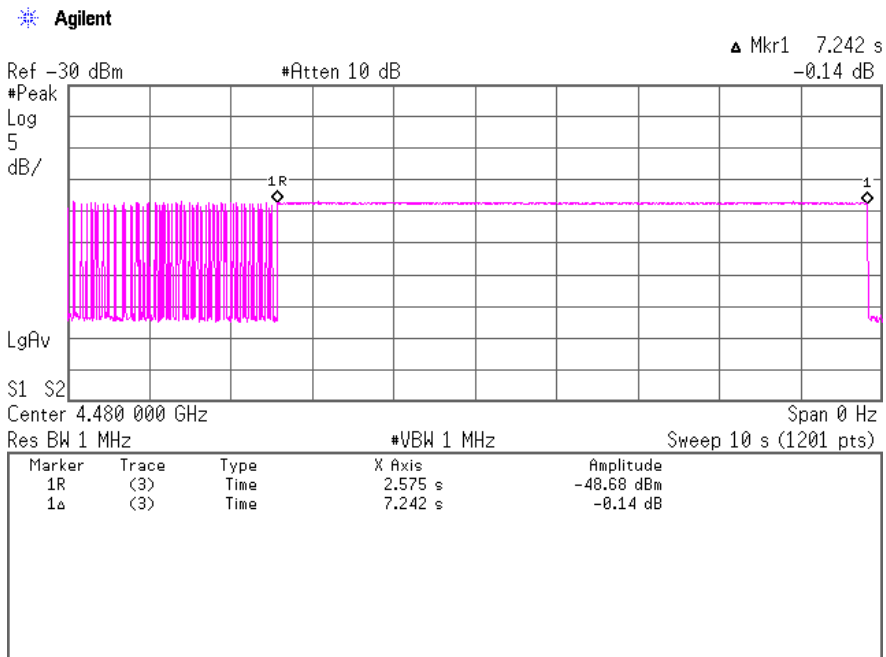
RESULT (EIRP) = RESULT (3m field strength) - 95.2 -  $20 \log(RBW/50)$

## Transmitter Timeout (Regulation: FCC 15.519(a)(1))

**COMPANY** : SMK Corporation  
**Equipment** : Half-Mini Card size TransferJet module  
**MODEL NUMBER**: TJ101  
**SERIAL NUMBER**: 167  
**POWER** : DC3.3V  
**Remarks** : -

**UL Japan, Inc. SHONAN No.6 Shield Room**  
**REPORT No.** : 31EE0216-SH-01-A  
**REGULATION** : FCC Part15SubpartF 519(a)(1)  
**DATE** : 2011/2/16  
**TEMP./HUMI** : 25deg.C/41% RH  
**TEST MODE** : Communication  
**ENGINEER** : Tatsuya Arai

**Transmitter Timeout: 7.242s (LIMIT: <10s)**



## DATA OF RADIATION TEST (Precheck Worst Case)

UL Japan, Inc.  
SHONAN NO.3 ANECHOIC CHAMBER  
Report No. : 31EE216-SH-01-A

Company : SMK Corporation  
Equipment : Half-Mini Card size TransferJet module  
Model : TJ101  
Sample No. : 030  
Power : DC3.3V  
Mode : Transmitting

Regulation : FCC Part15F Section 15.519(c)  
Test Distance : 0.5m  
Date : 2011/2/14  
Temperature : 20deg.C  
Humidity : 21% RH

ENGINEER : Tatsuya Arai

### *Horizontal (RBW: 1MHz)*

No.	Antenna Type	Cable Type	FREQ [MHz]	READING [dBuV]	ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	Distance Factor [dB]	RESULT		LIMIT [dBm]	MARGIN [dB]	Detector
									3m [dBuV/m]	EIRP [dBm]			
1	A	A	4480.00	42.7	30.7	40.4	2.8	15.6	20.2	-75.0	-41.3	33.7	RMS
2	A	B	4620.00	40.1	31.1	40.3	2.8	15.6	18.1	-77.1	-41.3	35.8	RMS
3	A	C	4340.00	40.2	30.5	40.5	2.7	15.6	17.3	-77.9	-41.3	36.6	RMS
4	B	A	4640.00	42.0	31.0	40.3	2.8	15.6	19.9	-75.3	-41.3	34.0	RMS
5	B	B	4513.00	40.6	30.8	40.4	2.8	15.6	18.2	-77.0	-41.3	35.7	RMS
6	B	C	4480.00	41.4	30.7	40.4	2.8	15.6	18.9	-76.3	-41.3	35.0	RMS
7	C	A	4620.00	41.4	31.1	40.3	2.8	15.6	19.4	-75.8	-41.3	34.5	RMS
8	C	B	4343.00	39.7	30.5	40.5	2.7	15.6	16.8	-78.4	-41.3	37.1	RMS
9	C	C	4480.00	40.7	30.7	40.4	2.8	15.6	18.2	-77.0	-41.3	35.7	RMS

### *Vertical (RBW: 1MHz)*

No.	Antenna Type	Cable Type	FREQ [MHz]	READING [dBuV]	ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	Distance Factor [dB]	RESULT		LIMIT [dBm]	MARGIN [dB]	Detector
									3m [dBuV/m]	EIRP [dBm]			
1	A	A	4480.00	43.6	30.7	40.4	2.8	15.6	21.1	-74.1	-41.3	32.8	RMS
2	A	B	4480.00	39.3	30.7	40.4	2.8	15.6	16.8	-78.4	-41.3	37.1	RMS
3	A	C	4480.00	38.3	30.7	40.4	2.8	15.6	15.8	-79.4	-41.3	38.1	RMS
4	B	A	4580.00	43.1	31.0	40.3	2.8	15.6	21.0	-74.2	-41.3	32.9	RMS
5	B	B	4480.00	39.4	30.7	40.4	2.8	15.6	16.9	-78.3	-41.3	37.0	RMS
6	B	C	4480.00	42.2	30.7	40.4	2.8	15.6	19.7	-75.5	-41.3	34.2	RMS
7	C	A	4660.00	41.9	31.2	40.2	2.8	15.6	20.1	-75.1	-41.3	33.8	RMS
8	C	B	4480.00	41.5	30.7	40.4	2.8	15.6	19.0	-76.2	-41.3	34.9	RMS
9	C	C	4480.00	41.5	30.7	40.4	2.8	15.6	19.0	-76.2	-41.3	34.9	RMS

Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + Loss (Cable + ATT) - Distance Factor

Distance Factor calculatio0.5m:  $20 \cdot \log(3.0[m]/0.5[m]) = 15.6[dB]$

RESULT (EIRP) = RESULT (3m field strength) - 95.2



### APPENDIX 3 Test Instruments

#### EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE 1-18GHz	2010/03/09 * 12
SCC-G12	Coaxial Cable	Suhner	SUCOFLEX 102	30790/2	RE 1-18GHz	2010/03/09 * 12
SCC-G13	Coaxial Cable	Suhner	SUCOFLEX 102	31599/2	RE 1-18GHz	2010/03/09 * 12
SCC-G03	Coaxial Cable	Suhner	SUCOFLEX 104A	46499/4A	RE 1-18GHz	2010/04/16 * 12
SCC-G03	Coaxial Cable	Suhner	SUCOFLEX 104A	46499/4A	RE 1-18GHz	2010/04/16 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE 1-18GHz	2010/08/17 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2011/02/23 * 12
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	RE 1-40GHz	2010/11/16 * 12
SJM-10	Measure	PROMART	SEN1935	-	RE/CE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV	-	RE/CE	-
SHA-05	Horn Antenna	ETS LINDGREN	3160-09	LM4210	RE 18-26.5GHz	2010/03/29 * 12
SHA-06	Horn Antenna	ETS LINDGREN	3160-10	LM3459	RE 26.5-40GHz	2010/04/09 * 12
SCC-G17	Coaxial Cable	Suhner	SUCOFLEX 104A	46291/4A	RE 18-26.5GHz	2010/03/02 * 12
SCC-G18	Coaxial Cable	Suhner	SUCOFLEX 104A	46292/4A	RE 26.5-40GHz	2010/03/02 * 12
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE 30-1000MHz	2011/02/17 * 12
SAT6-03	Attenuator	JFW	50HF-006N	-	RE 30-1000MHz	2011/02/17 * 12
SBA-03	Biconical Antenna	Schwarzbeck	BBA9106	91032666	RE 30-300MHz	2010/10/15 * 12
SCC-C1/C2/C3/C4/C5/C10/SRSE-03	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-271(RF Selector)	RE 30-1000MHz	2010/04/02 * 12
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A0901	RE300-1000MHz	2010/10/15 * 12
STR-03	Test Receiver	Rohde & Schwarz	ESI40	100054/040	RE30-1000MHz/CE	2010/07/21 * 12
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2010/09/13 * 12
SCC-C9/C10/SRSE-03	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-271(RF Selector)	CE	2010/04/02 * 12
SLS-08	LISN	Schwarzbeck	NSLK8126	8126442	CE	2010/09/02 * 12
SAT3-03	Attenuator	JFW	50HF-003N	-	CE	2011/02/17 * 12
SOS-06	Humidity Indicator	A&D	AD-5681	4062118	CE	2011/03/02 * 12
SHF-01	Highpass Filter	Rohde & Schwarz	EZ-25	100021	CE	2011/03/01 * 12
SCC-01	Coaxial Cable	Fujikura	5D2W	-	CE	2011/01/07 * 12

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 traceable calibrations . Each calibration is traceable to the national or international standards .

Test Item :

CE: Conducted emission ,  
RE: Radiated emission ,

**APPENDIX 3  
Test Instruments**

**EMI test equipment**

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	AT	2010/11/16 * 12
SAF-04	Pre Amplifier	TOYO Corporation	TPA0118-36	1440489	AT	2010/03/09 * 12
SCC-G11	Coaxial Cable	Suhner	SUCOFLEX 102	31595/2	AT	2010/03/31 * 12
SCC-G12	Coaxial Cable	Suhner	SUCOFLEX 102	30790/2	AT	2010/03/09 * 12
SAT10-04	Attenuator(above1GHz)	Agilent	8493C-010	74863	AT	2010/12/15 * 12
SPSC-03	Power Splitters/Combiners	Mini-Circuit	ZFSC-2-10G	-	AT	2010/04/28 * 12

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 traceable calibrations . Each calibration is traceable to the national or international standards .

Test Item :

AT: Antenna terminal conducted test