

Appendix 2 (Test Data)

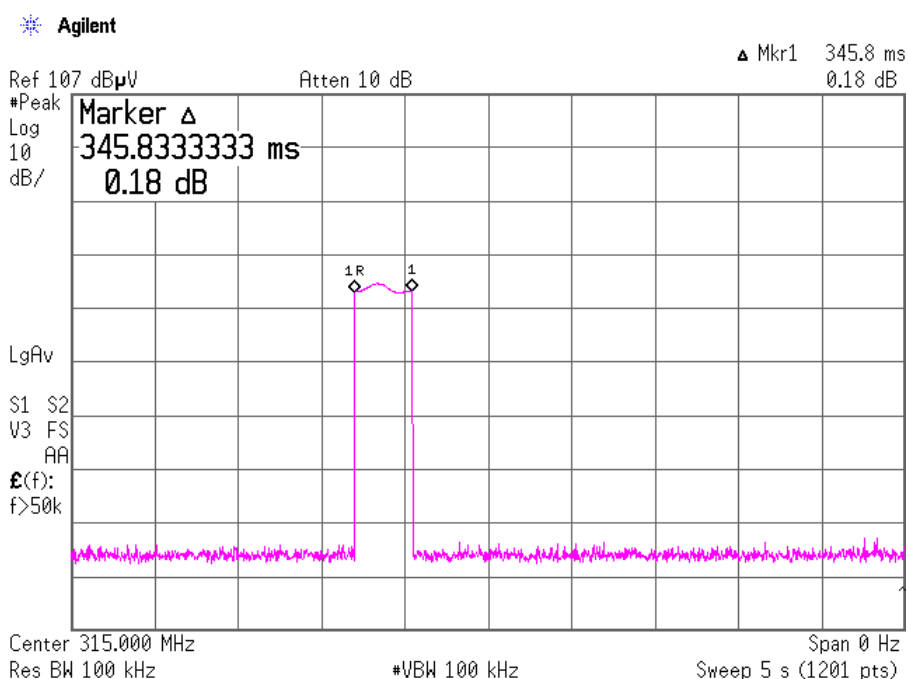
Automatically deactivate

COMPANY : U-SHIN LTD.
EQUIPMENT : SWITCH ASSY, DOOR CONTOROL
MODEL NUMBER: WRDCE0050TX
SERIAL NUMBER: 17
POWER : DC3V

UL Japan, Inc. SHONAN EMC Lab. No.5 Shielded room
REPORT NO : 29LE0111-HO-01-B-R1
REGULATION : FCC Part15SubpartC 231(a)(1)
DATE : 2009/12/22
TEMP./HUMI : 23°C/37%
TEST MODE : Normal use
ENGINEER : Hikaru Shirasawa

Operation in FCC15.231(a)(1) (Limit: total ≤5sec)

Time of Transmitting	Limit
[sec]	[sec]
0.34583	5.00



Radiated Emission (Electric Field Strength of Fundamental and Spurious Emission)

UL Japan, Inc.

SHONAN EMC Lab. No.1 Semi-Anechoic Chamber

Report No. : 29LE0111-HO-01-B-R1

Company : U-SHIN.LTD
 Equipment : SWITCH ASSY, DOOR CONTROL
 Model : WRDCE0050TX
 Sample No. : 19
 Power : DC 3.0V (Battery)
 Mode : Transmitting 315MHz

Regulation : FCC Part15C Section 15.231(b), 15.209
 Test Distance : 3m
 Date : 2009/12/18
 Temperature : 18deg.C
 Humidity : 36%

ENGINEER : Akio Hayashi

Peak with Duty factor

Frequency [MHz]	Reading [dBuV]		Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]		Remark Inside or Outside of Restricted Bands
	Hor	Ver					Hor	Ver		Hor	Ver	
314.998	75.7	72.8	14.1	9.2	31.7	-6.3	61.0	58.1	75.6	14.6	17.5	Carrier
629.996	40.5	40.9	19.2	10.8	32.0	-6.3	32.2	32.6	55.6	23.4	23.0	Outside(Hor:X, Ver:Y-axis)
944.994	32.4	29.8	22.4	12.1	31.1	-6.3	29.5	26.9	55.6	26.1	28.7	Outside(Hor:X, Ver:Y-axis)
1259.992	50.9	50.3	24.3	2.5	39.7	-6.3	31.7	31.1	55.6	23.9	24.5	Outside(Hor:X, Ver:Y-axis)
1574.990	54.8	55.0	25.0	2.8	39.5	-6.3	36.8	37.0	53.9	17.1	16.9	Inside(Hor:X, Ver:Y-axis)
1889.988	66.8	67.3	25.8	3.1	39.5	-6.3	49.9	50.4	55.6	5.7	5.2	Outside(Hor:Y, Ver:Y-axis)
2204.986	50.2	50.3	26.9	3.4	39.3	-6.3	34.9	35.0	53.9	19.0	18.9	Inside(Hor:X, Ver:Y-axis)
2519.984	68.9	68.9	28.1	3.7	39.1	-6.3	55.3	55.3	55.6	0.3	0.3	Outside(Hor:Z, Ver:Z-axis)
2834.982	64.8	63.1	28.5	3.9	39.5	-6.3	51.4	49.7	53.9	2.5	4.2	Inside(Hor:X, Ver:Y-axis)
3149.980	67.7	66.2	28.7	4.1	39.8	-6.3	54.4	52.9	55.6	1.2	2.7	Outside(Hor:Z, Ver:Y-axis)

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter) - Gain(Amplifier) + Duty factor (Refer to Duty factor data sheet)

Peak

Frequency [MHz]	Reading [dBuV]		Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]		Remark Inside or Outside of Restricted Bands
	Hor	Ver					Hor	Ver		Hor	Ver	
314.998	75.7	72.8	14.1	9.2	31.7	-	67.3	64.4	-	-	-	Carrier(Reference)
1259.992	50.9	50.3	24.3	2.5	39.7	-	38.0	37.4	75.6	37.6	38.2	Outside(Hor:X, Ver:Y-axis)
1574.990	54.8	55.0	25.0	2.8	39.5	-	43.1	43.3	73.9	30.8	30.6	Inside(Hor:X, Ver:Y-axis)
1889.988	66.8	67.3	25.8	3.1	39.5	-	56.2	56.7	75.6	19.4	18.9	Outside(Hor:Y, Ver:Y-axis)
2204.986	50.2	50.3	26.9	3.4	39.3	-	41.2	41.3	73.9	32.7	32.6	Inside(Hor:X, Ver:Y-axis)
2519.984	68.9	68.9	28.1	3.7	39.1	-	61.6	61.6	75.6	14.0	14.0	Outside(Hor:Z, Ver:Z-axis)
2834.982	64.8	63.1	28.5	3.9	39.5	-	57.7	56.0	73.9	16.2	17.9	Inside(Hor:X, Ver:Y-axis)
3149.980	67.7	66.2	28.7	4.1	39.8	-	60.7	59.2	75.6	14.9	16.4	Outside(Hor:Z, Ver:Y-axis)

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter) - Gain(Amplifier)

REMARKS

ANTENNA TYPE: 30-300MHz Biconical / 300-1000MHz Logperiodic / 1-3.2GHz DRG Horn

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

Duty Cycle

UL Japan, Inc. Shonan No.1 Semi-Anechoic Chamber

COMPANY : U-SHIN LTD.
EQUIPMENT : SWITCH ASSY, DOOR CONTROL
MODEL NUMBER: WRDCE0050TX
SERIAL NUMBER: 19
POWER : DC3V

REPORT NO. : 29LE0111-HO-01-B-R1
DATE : 2009/12/18
TEMP./HUMI : 18deg.C./36%
TEST MODE : Transmitting 315MHz
ENGINEER : Akio Hayashi

Type	Times	ON time(One pulse) [ms]	ON time(in 100ms) [ms]
A	15	1.026	15.39
B	65	0.508	33.02

*1)ON time(in 100ms) = Times * ON time(One pulse)

*2)The train of pulses was exceeding 100msec, and that sampled 100msec was the worst case against the pulse

(Total)

ON time [ms]	Cycle [ms]	Duty (On time/Cycle)	Duty [dB]
48.41	100.00	0.48	-6.3

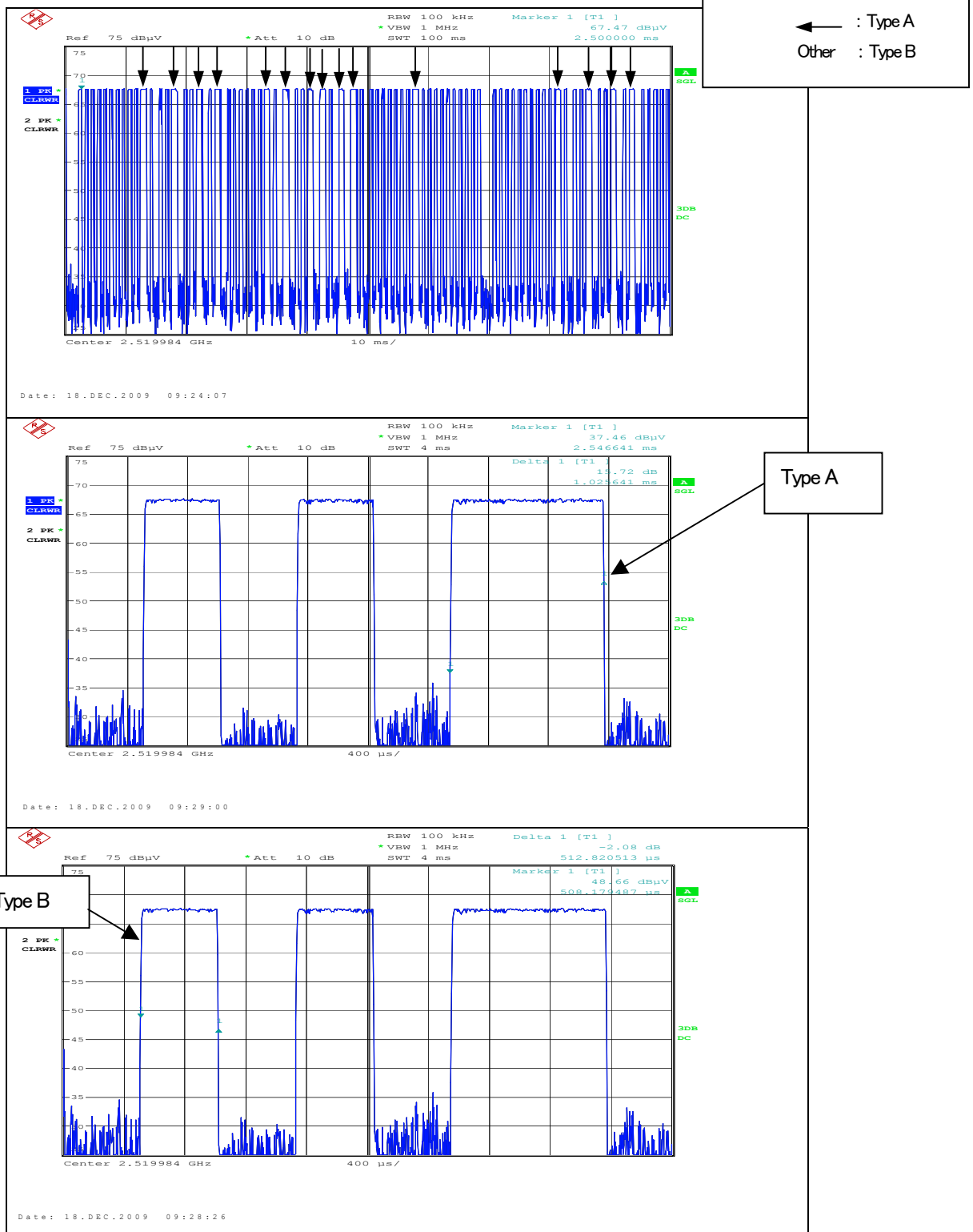
*3)ON time = Type A's ON time (in 100ms) + Type B's ON time (in 100ms)

*4)Duty = $20\log_{10}(\text{ON time/Cycle})$

Duty Cycle

COMPANY : U-SHIN LTD.
EQUIPMENT : SWITCH ASSY, DOOR CONTROL
MODEL NUMBER: WRDCE0050TX
SERIAL NUMBER: 19
POWER : DC3V

UL Japan, Inc. Shonan No.1 Semi-Anechoic Chamber
REPORT NO. : 29LE0111-HO-01-B-R1
DATE : 2009/12/18
TEMP/HUMI : 18deg.C/36%
TEST MODE : Transmitting 315MHz
ENGINEER : Akio Hayashi

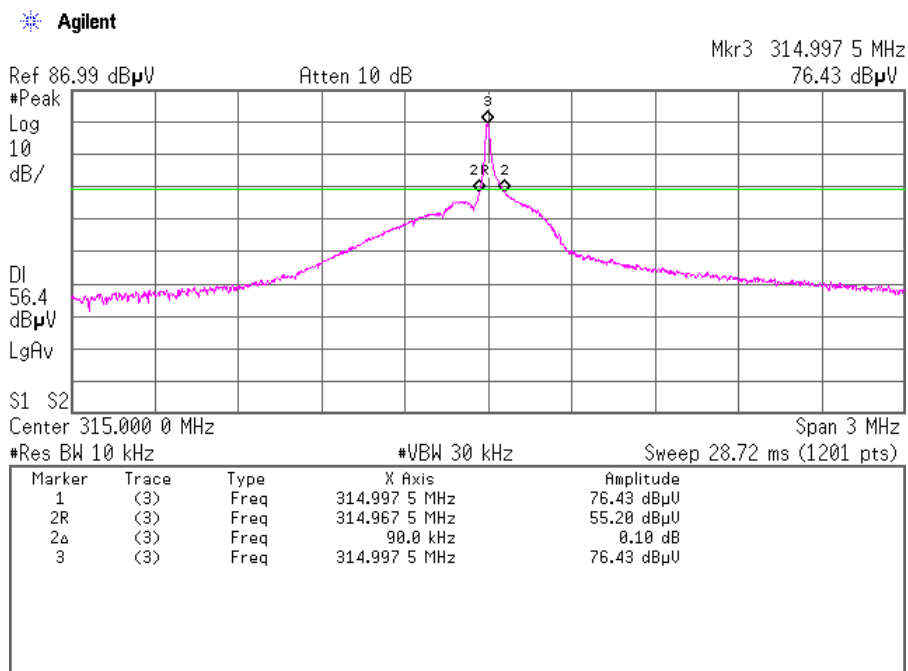


20dB Bandwidth

COMPANY : U-SHIN LTD. EQUIPMENT : SWITCH ASSY, DOOR CONTOROL MODEL NUMBER : WRDCE0050TX SERIAL NUMBER : 19 POWER : DC3V	UL Japan, Inc. Shonan No.2 Semi-Anechoic Chamber REPORT NO : 29LE0111-HO-01-B-R1 REGULATION : FCC Part15SubpartC 231(c) DATE : 2009/12/16 TEMP/HUMI : 23°C/30% TEST MODE : Transmitting 315MHz ENGINEER : Hikaru Shirasawa
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Bandwidth Limit : fundamental Frequency 315MHz X 0.25%= 787.5 kHz

-20dB Bandwidth	Bandwidth Limit	Result
[kHz]	[kHz]	
90.000	787.5	Pass



Occupied Bandwidth(99%)

COMPANY : U-SHIN LTD.

EQUIPMENT : SWITCH ASSY, DOOR CONTOROL

MODEL NUMBER: WRDCE0050TX

SERIAL NUMBER: 19

POWER : DC3V

UL Japan, Inc. Shonan No.2 Semi-anechoic Chamber

REPORT NO : 29LE0111-HO-01-B-R1

REGULATION : RSS-Gen 4.6.1

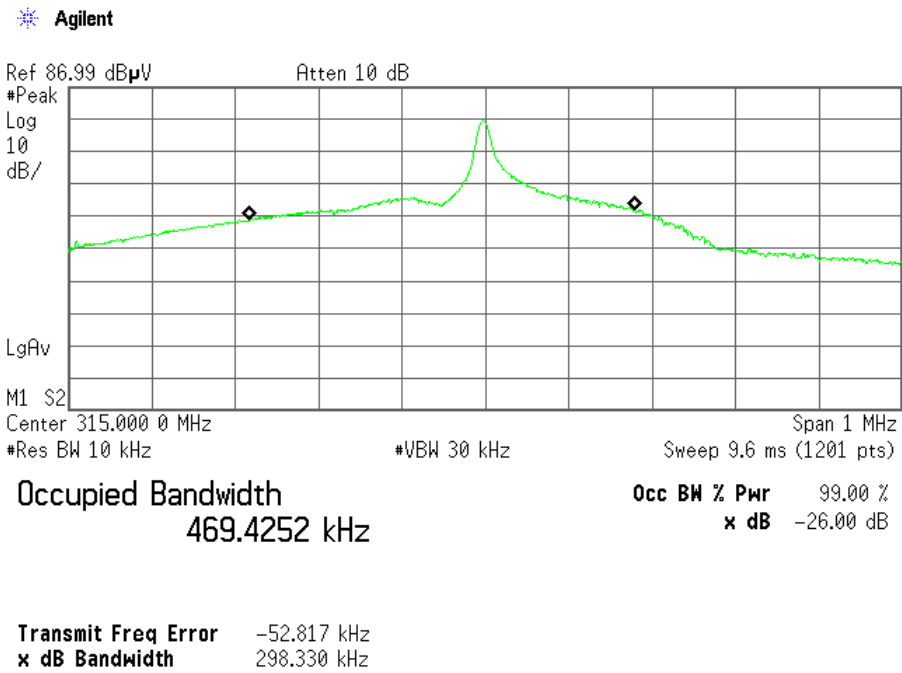
DATE : 2009/12/16

TEMP/HUMI : 23°C/30%

TEST MODE : Transmitting 315MHz

ENGINEER : Hikaru Shirasawa

99% Occupied Bandwidth
[kHz]
469.4252kHz



APPENDIX 3

Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SAF-01	Pre Amplifier	SONOMA	310N	290211	RE	2009/02/13 * 12
SAT6-01	Attenuator	JFW	50HF-006N	-	RE	2009/02/13 * 12
SAT6-02	Attenuator	JFW	50HF-006N	-	RE	2009/02/13 * 12
SBA-01	Biconical Antenna	Schwarzbeck	BBA9106	91032664	RE	2009/03/20 * 12
SCC-A1/A3/A5/A7/A8/A13/SRSE-01	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-269(RF Selector)	RE	2009/04/06 * 12
SCC-A2/A4/A6/A7/A8/A13/SRSE-01	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-269(RF Selector)	RE	2009/04/06 * 12
SLA-01	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0888	RE	2009/03/20 * 12
SOS-01	Humidity Indicator	A&D	AD-5681	4062555	RE	2009/02/04 * 12
STR-01	Test Receiver	Rohde & Schwarz	ESU40	100093	RE	2009/04/02 * 12
SJM-01	Measure	KOMELON	KMC-36	-	RE	-
SAEC-01(NSA)	Semi-Anechoic Chamber	TDK	SAEC-01(NSA)	1	RE	2009/09/24 * 12
COTS-SEMI-I	EMI Software	TSJ	TEPTO-DV	-	RE	-
SAF-04	Pre Amplifier	TOYO Corporation	TPA0118-36	1440489	RE	2009/03/26 * 12
SCC-G01	Coaxial Cable	Suhner	SUCOFLEX 104A	46497/4A	RE	2009/04/10 * 12
SCC-G21	Coaxial Cable	Suhner	SUCOFLEX 104	296169/4	RE	2009/05/27 * 12
SHA-01	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-725	RE	2009/08/23 * 12
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	RE	2009/06/09 * 12
SCC-G12	Coaxial Cable	Suhner	SUCOFLEX 102	30790/2	RE	2009/03/11 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	RE	2009/02/04 * 12
SAF-02	Pre Amplifier	SONOMA	310N	290212	RE	2009/02/13 * 12
SAT6-03	Attenuator	JFW	50HF-006N	-	RE	2009/02/13 * 12
SAT6-04	Attenuator	JFW	50HF-006N	-	RE	2009/02/13 * 12
SBA-02	Biconical Antenna	Schwarzbeck	BBA9106	91032665	RE	2009/03/20 * 12
SCC-B1/B3/B5/B7/B8/B13/SRSE-02	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-270(RF Selector)	RE	2009/04/06 * 12
SCC-B2/B4/B6/B7/B8/B13/SRSE-02	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-270(RF Selector)	RE	2009/04/06 * 12
SLA-02	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0893	RE	2009/03/20 * 12
SOS-03	Humidity Indicator	A&D	AD-5681	4063325	RE	2009/02/04 * 12
SSA-01	Spectrum Analyzer	Agilent	N9010A-526	MY48031482	RE	2009/03/31 * 12
STR-02	Test Receiver	Rohde & Schwarz	ESCI	100575	RE	2009/07/24 * 12
SJM-02	Measure	KOMELON	KMC-36	-	RE	-
SAEC-02(NSA)	Semi-Anechoic Chamber	TDK	SAEC-02(NSA)	2	RE	2009/09/16 * 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 :

RE: Radiated emission