

TEST REPORT

Job No. : GPEM2406000475EC
Test Report No. : F690501-RF-EMC002597
Applicant : Dogtra Co., Ltd.
Product Name : DOG TRAINING DEVICE
Model Name : NB20UR
Standards : FCC Part 15 Subpart B
FCC ID : SWN-NB20UR
Date of Receipt : June 25, 2024
Date of Test : June 27, 2024 ~ July 17, 2024
Date of Issue : August 19, 2024
Test Result : Complied

- 1) This test report does not assure KOLAS accreditation.
2) The results of this test report are effective only to the items tested.
3) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.

	Tested by (Name, signature)	Approved by (Name, signature)
Affirmation	DoHyeon Lee 	Paul Kang 

SGS Korea Co., Ltd. Gunpo Laboratory

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Revision History

Revision	Report Number	Description
0	F690501-RF-EMC002597	Initial

1. Test Laboratory

1.1 General information

Name	SGS Korea Co., Ltd.		
- Branch Site	4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Republic of Korea		
	Tel. 82 31 428 5700		Fax. 82 31 427 5370
- Branch Site-3	35, Giheungdanji-ro 121beon-gil, Giheung-gu, Yongin-si, Gyeonggi-do, Republic of Korea		
	Tel. 82 31 548 0710		Fax. 82 31 548 0719
- Branch Site-4	12, Dongtansandan 10-gil, Hwaseong-si, Gyeonggi-do, 18487, Republic of Korea		
	Tel. 82 31 8007 5302		Fax. 82 31 427 2370
Website	http://www.sgsgroup.kr/ee		

SGS Korea Co., Ltd. has been accredited by the agencies listed in the following table;

Accreditation	Accreditation bodies	Accreditation No.
KC	MSIT- RRA	KR0150
FCC	FCC (MRA)	
IC	IC (MRA)	
Vietnam-MIC	Vietnam-MIC	
Japan EMI	VCCI	C-14102, T-11156, R-13662, G-20037
KOLAS	KATS - KOLAS	Testing No.123
CBTL	IECEE	TL 146
SDPPI	SDPPI	-

2. General Information of E.U.T.

2.1 Applicant Information

Applicant	Dogtra Co., Ltd.
Applicant Address	35, Namdongdong-ro 33beon-gil, Namdong-gu, Incheon, 21694, Rep. of KOREA
Manufacturer	Dogtra Co., Ltd.
Manufacturer Address	35, Namdongdong-ro 33beon-gil, Namdong-gu, Incheon, 21694, Rep. of KOREA

2.2 General Information of E.U.T.

Classification	Description
Product Name	DOG TRAINING DEVICE
Model Name	NB20UR
Alt. Model Name	SMART NOBARK, YS SMART, BARK SMART, BARK PATROL
Model Differences	There is no difference as basic model, The only difference is the sales model name per buyer's request.
Serial No.	-
EMI Classification	Class B
Internal Clock Frequency	32 MHz (Bluetooth : 2 480 MHz)
Rated Power	3.7 Vd.c.(Li-Po Battery)
Tested Power	Operating : 3.7 Vd.c.(Li-Po Battery) Charging : 120 V~, 60 Hz
H/W Version	Rev1.0
S/W Version	v1.0.0
Port	USB C-Type
Components	USB Cable
Function	DOG TRAINING DEVICE

2.3 Configurations of E.U.T

Description	Model	Serial No.	Manufacturer	Note
Main Board	ML NoBark_Rev1.0	-	-	-
Battery	AE651730P	-	-	China
FPCB	LT1306P	-	-	-
OLED Module	L2832TSWW	-	-	-
Motor	-	-	-	-

3. E.U.T. Operation and Test Configuration

3.1 Peripheral Equipments

Description	Model	Serial No.	Manufacturer	Note.
Mobile Phone	SM-G950N	R39J50CW02	SAMSUNG	-
AC/DC Adapter	MKC-0502500SEUU	-	Shenzhen Merryking Electronics Co., Ltd.	China

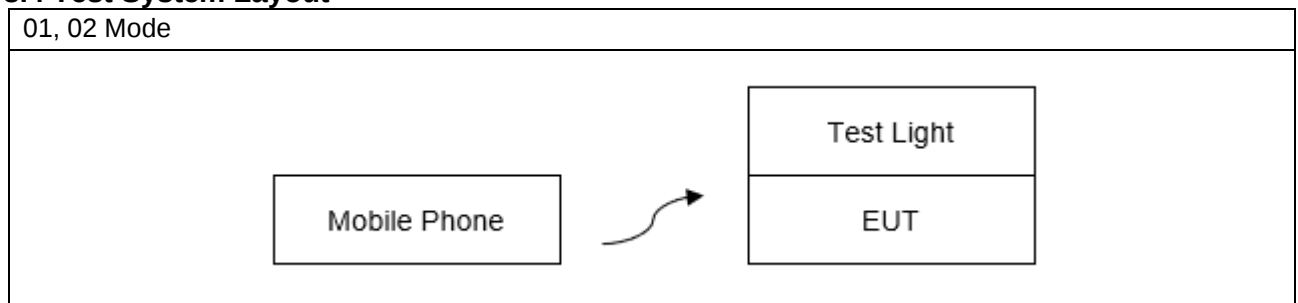
3.2 Cable List

Start		END		Cable Spec.		Used core
Name	I/O Port	Name	I/O Port	Length (m)	Shield	
01, 02 Mode						
EUT	-	Mobile Phone	-	-	-	-
	Removable Contact Points	Test Light	Removable Contact Points	-	-	-
03 Mode						
EUT	AC IN	AC/DC Adapter	AC OUT	1.5	Unshielded	-

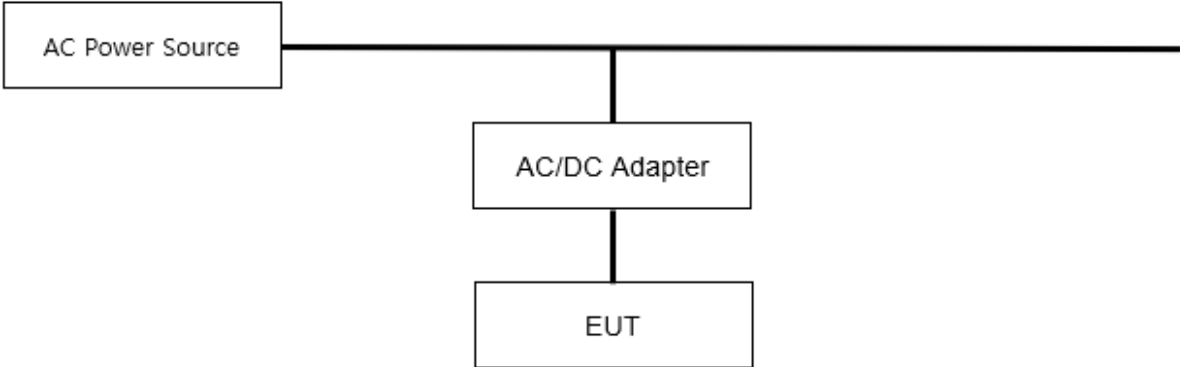
3.3 Operating Modes and Conditions

Operating mode	Operating condition
01 Operating (Bluetooth+Electric)	Bluetooth+Electric Operating state.
02 Operating (Bluetooth+Vibration)	Bluetooth+Vibration Operating state.
03 Charging	Charging state.

3.4 Test System Layout



03 Mode



3.5 Modifications to the test items during testing

- ☒
No modifications done during testing
- ☐
Modification done during testing (see details below)

No.	Description of modification (if any)
1	
2	

4. Test Results

4.1 Summary

Test Items	Standards	Test Results
Conducted Emission	FCC Part 15 Subpart B Section 15.107 ANSI C63.4a:2017	Complied
Radiated Emission	FCC Part 15 Subpart B Section 15.109 ANSI C63.4a:2017	Complied

4.2 Note

- 1 Test Methods of all test items are performed according to the basic standard in subclause 4.1.
- 2

Emission Test

5.1 Test Method and Limits

Test Items	Measuring Frequency Range	RBW	Measuring Distance
Conducted Emission	0.15 MHz - 30 MHz	9 kHz	-
Radiated Emission	30 MHz - 1 GHz	120 kHz	10 m or 3 m
	Above 1 GHz	1 MHz	3 m

5.2 Test Limits

Frequency Range	Limits(dBμV)		Class
	Quasi-peak	CISPR-Average	
0.15 MHz - 0.5 MHz	79	66	Class A
0.5 MHz - 30 MHz	73	60	
0.15 MHz - 0.5 MHz	66 to 56 ^{Note1}	56 to 46 ^{Note1}	Class B
0.5 MHz - 5 MHz	56	46	
5 MHz - 30 MHz	60	50	

[Table 2.1 Conducted Emission Limits]

Frequency Range	Limits(dBμV/m)	Class
	Quasi-peak	
30 MHz - 88 MHz	39.0	Class A (10 m method)
88 MHz - 216 MHz	43.5	
216 MHz - 960 MHz	46.4	
960 MHz - 1 GHz	49.5	
30 MHz - 88 MHz	40.0	Class B (3 m method)
88 MHz - 216 MHz	43.5	
216 MHz - 960 MHz	46.0	
960 MHz - 1 GHz	54.0	

[Table 2.2 Radiated Emission Limits below 1 GHz]

Frequency Range	Limits(dBμV)		Class
	Quasi-peak	CISPR-Average	
Above 1 GHz	79.5	59.5	Class A
	74.0	54.0	Class B

[Table 2.3 Radiated Emission Limits Above 1 GHz ^{Note2}]

Note 1. The lower limit shall apply at the transition frequencies. The limit decreases linearly with the logarithm of that frequency.

Note 2. The limits of class A equipment is extrapolated using an extrapolation factor of 20 dB/decade because it was measured at 3 m distance not 10 m distance.

5.3 Conducted Emission

5.3.1 Test Equipments

Description	Model No.	Manufacturer	Serial No	Cal Due. Date
EMI TEST RECEIVER	ESU8	R&S	100128	2025-05-28
2-LINE V-NETWORK	ENV216	R&S	101180	2024-08-04
PULSE LIMITER	ESH3-Z2	R&S	100283	2024-08-28

Note. Measuring software is below

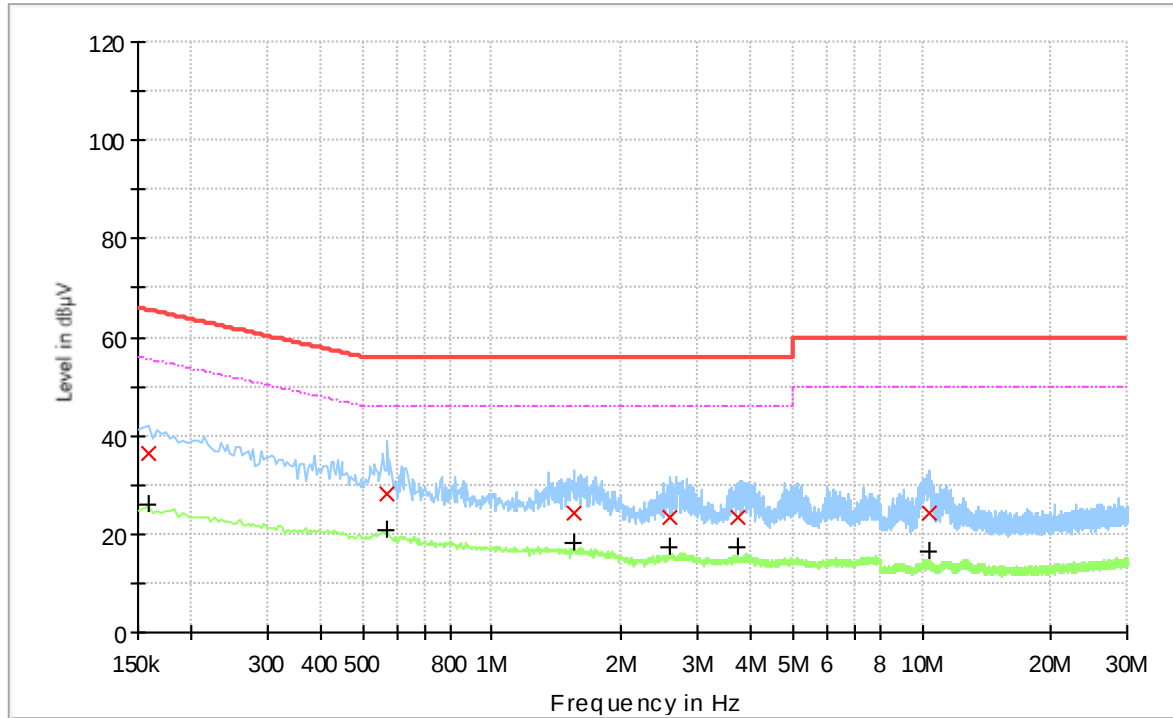
- Branch Site : EMC32(V10.60.20) from R&S
- Branch Site-3 : EMC32(V10.40.10) from R&S
- Branch Site-4 : EMC32(V10.40.00) from R&S

5.3.2 Environment Conditions

Test Site	Shield Room in Branch site-3
Temperature	(Minimum 20.0, Maximum 21.3) °C
Humidity	(Minimum 45.0, Maximum 47.0) % R.H.
Atmospheric Pressure	(Minimum 99.8, Maximum 99.8) kPa
Test Date	2024-07-09

5.3.3 Test Results

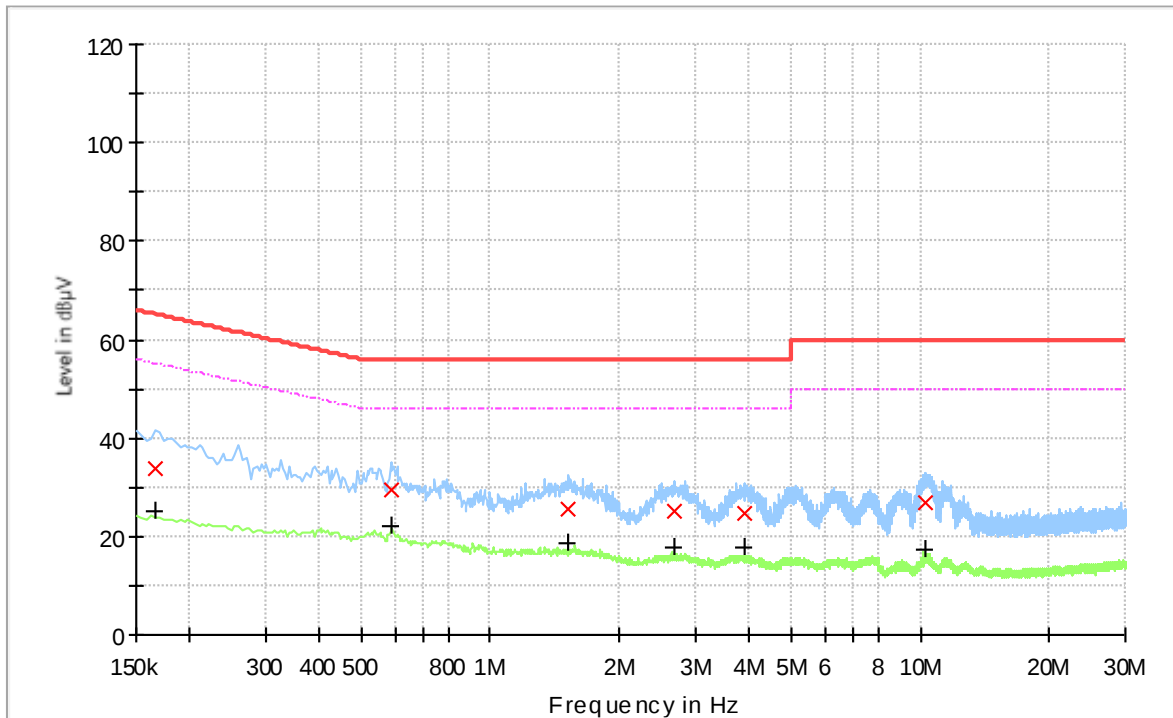
Live Line_03 Mode



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.158	36.19	---	65.57	29.38	15 000.0	9.000	L1	ON	19.8
0.158	---	26.10	55.57	29.46	15 000.0	9.000	L1	ON	19.8
0.570	28.13	---	56.00	27.87	15 000.0	9.000	L1	ON	19.9
0.570	---	20.99	46.00	25.01	15 000.0	9.000	L1	ON	19.9
1.550	24.45	---	56.00	31.55	15 000.0	9.000	L1	ON	19.7
1.550	---	18.24	46.00	27.76	15 000.0	9.000	L1	ON	19.7
2.602	23.46	---	56.00	32.54	15 000.0	9.000	L1	ON	19.7
2.602	---	17.29	46.00	28.71	15 000.0	9.000	L1	ON	19.7
3.710	23.28	---	56.00	32.72	15 000.0	9.000	L1	ON	19.7
3.710	---	17.23	46.00	28.77	15 000.0	9.000	L1	ON	19.7
10.370	24.28	---	60.00	35.72	15 000.0	9.000	L1	ON	20.1
10.370	---	16.42	50.00	33.58	15 000.0	9.000	L1	ON	20.1

Neutral Line_03 Mode



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.166	---	25.33	55.16	29.83	15 000.0	9.000	N	ON	19.9
0.166	33.74	---	65.16	31.42	15 000.0	9.000	N	ON	19.9
0.586	---	22.10	46.00	23.90	15 000.0	9.000	N	ON	19.9
0.586	29.51	---	56.00	26.49	15 000.0	9.000	N	ON	19.9
1.522	---	18.64	46.00	27.36	15 000.0	9.000	N	ON	19.7
1.522	25.67	---	56.00	30.33	15 000.0	9.000	N	ON	19.7
2.686	---	17.85	46.00	28.15	15 000.0	9.000	N	ON	19.7
2.686	25.07	---	56.00	30.93	15 000.0	9.000	N	ON	19.7
3.902	---	17.59	46.00	28.41	15 000.0	9.000	N	ON	19.8
3.902	24.69	---	56.00	31.31	15 000.0	9.000	N	ON	19.8
10.262	---	17.54	50.00	32.46	15 000.0	9.000	N	ON	20.1
10.262	27.01	---	60.00	32.99	15 000.0	9.000	N	ON	20.1

Note. Measurement Uncertainty : See Appendix A

- Line (L1) : Live Line of AC Power
- Margin = Limit – Quasi Peak or CAverage

- Line (N) : Neutral Line of AC Power
- Corr. = LISN Factor + Cable loss + Pulse Limiter factor

Ex) In case

Freq ; 0.5 Mhz, level ; 30 dB(μV), CL ; 0.2 dB, LISN ; 9.5 dB, P/L: 9.8 dB

Result = Level + CL + LISN + P/L

$$= 30 + 0.2 + 9.5 + 9.8$$

$$= 49.5$$

Margin = Limit – Result

$$= 79 - 49.5$$

$$= 29.5$$

5.4 Radiated Emission

5.4.1 Test Equipments

Equipment	Model	Manufacturer	Serial No	Cal Due. Date
Below 1 GHz				
Hybrid Antenna	VULB9163	SCHWARZBECK	01126	2025-02-26
PREAMPLIFIER	AM-1431	MITEQ	1336160	2025-05-31
EMI TEST RECEIVER	ESU40	R&S	100075	2025-01-17
RF Cable	EMH-1Lab-RE-01	-	-	-
RF Cable	EMH-1Lab-RE-04	-	-	-
RF Cable	EMH-1Lab-RE-06	-	-	-
Above 1 GHz				
Horn Antenna	HF907	R & S	102270	2025-03-08
Signal Conditioning Unit	SCU18F	R & S	101058	2024-12-07
Test Receiver	ESU26	R & S	100109	2025-01-16
RF Cable	CA-05	-	-	-
RF Cable	CA-06	-	-	-
RF Cable	CA-08	-	-	-

Note. Measuring software is below

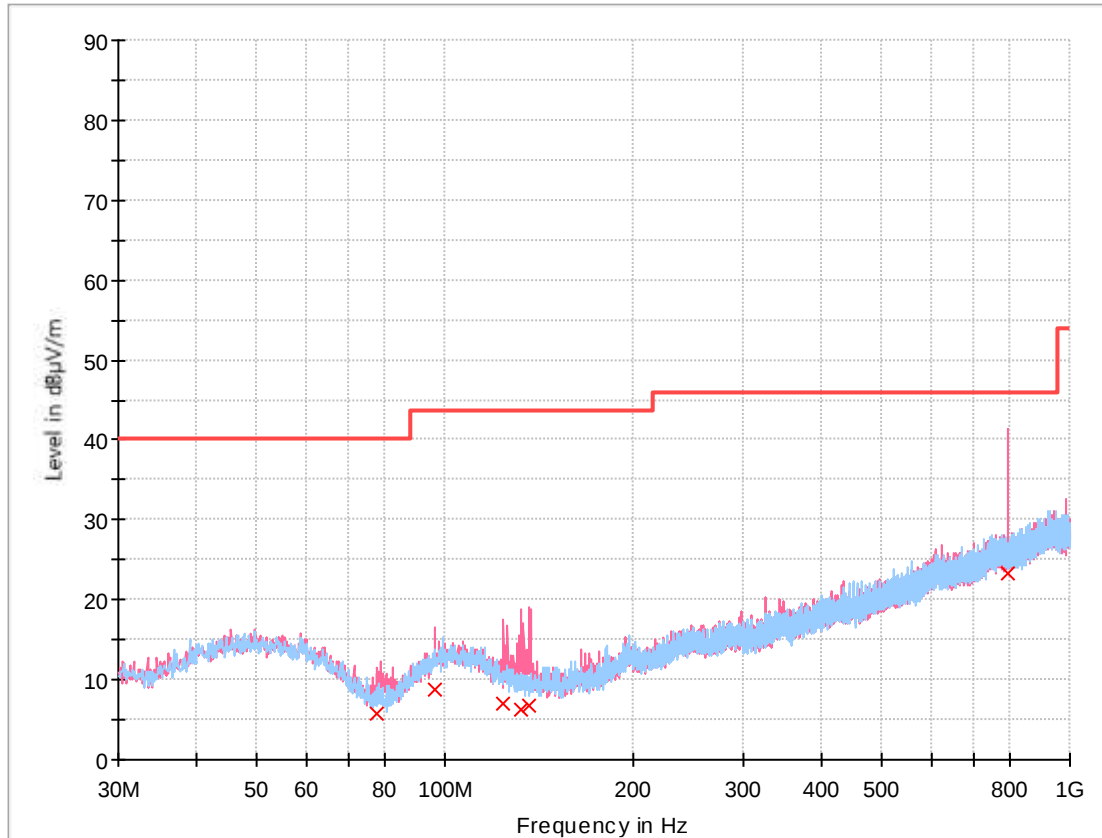
- Branch Site : ELECTRA(V5.02.0) from R&S
- Branch Site-3 : EMC32(V10.40.10) from R&S
- Branch Site-4 : EMC32(V10.40.10) from R&S

5.4.2 Environment Conditions

Test Site	10 m SEMI-ANECHOIC CHAMBER in Branch site-3 (for Below 1 GHz) 3 m SEMI-ANECHOIC CHAMBER in Branch site (for Above 1 GHz)
Temperature	(Minimum 20.1, Maximum 24.0) °C
Humidity	(Minimum 30.0, Maximum 50.0) % R.H.
Atmospheric Pressure	(Minimum 100.3, Maximum 101.2) kPa
Test Date	2024-06-27 (for Below 1 GHz) 2024-07-17 (for Above 1 GHz)

5.4.3 Test Result

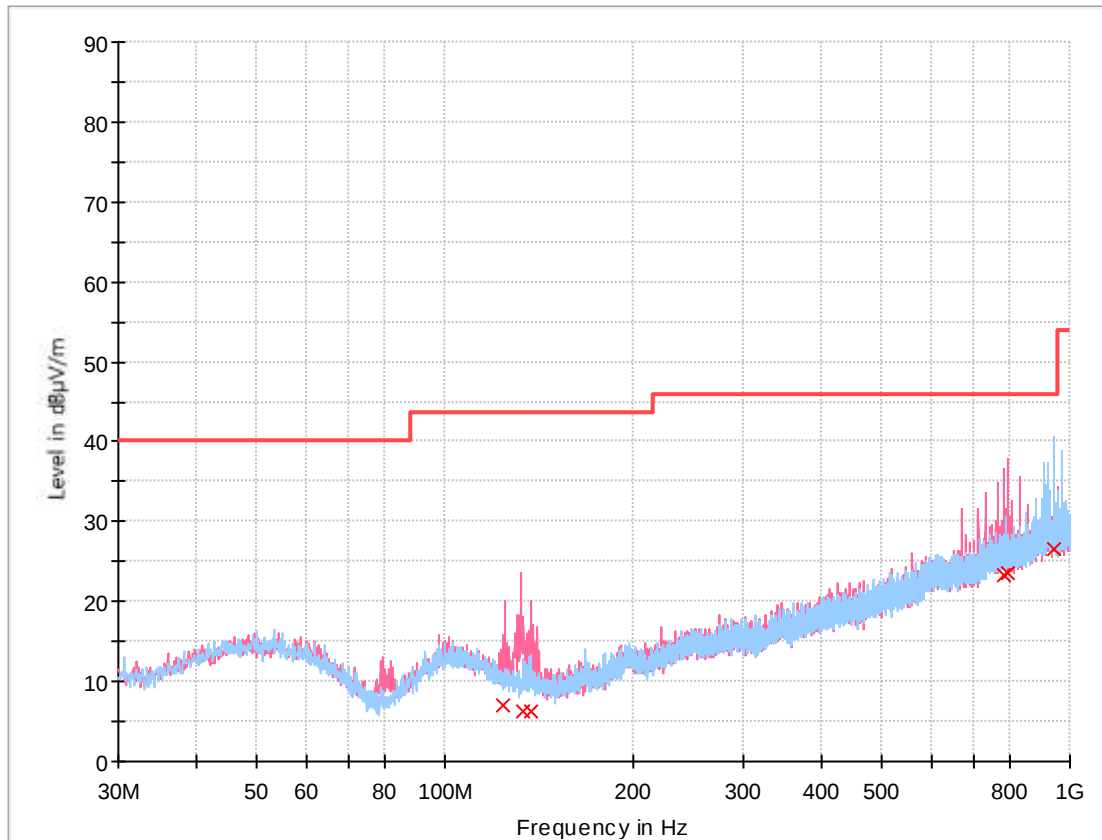
01 Mode



Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
77.495	5.83	40.00	34.17	15 000.0	120.000	150.0	V	49.0	-23.6
96.005	8.71	43.50	34.79	15 000.0	120.000	162.0	V	134.0	-18.9
124.027	6.91	43.50	36.59	15 000.0	120.000	250.0	V	345.0	-21.1
132.506	6.30	43.50	37.20	15 000.0	120.000	150.0	V	66.0	-21.8
136.631	6.70	43.50	36.80	15 000.0	120.000	100.0	V	58.0	-21.8
794.342	23.26	46.00	22.74	15 000.0	120.000	160.0	V	235.0	-4.9

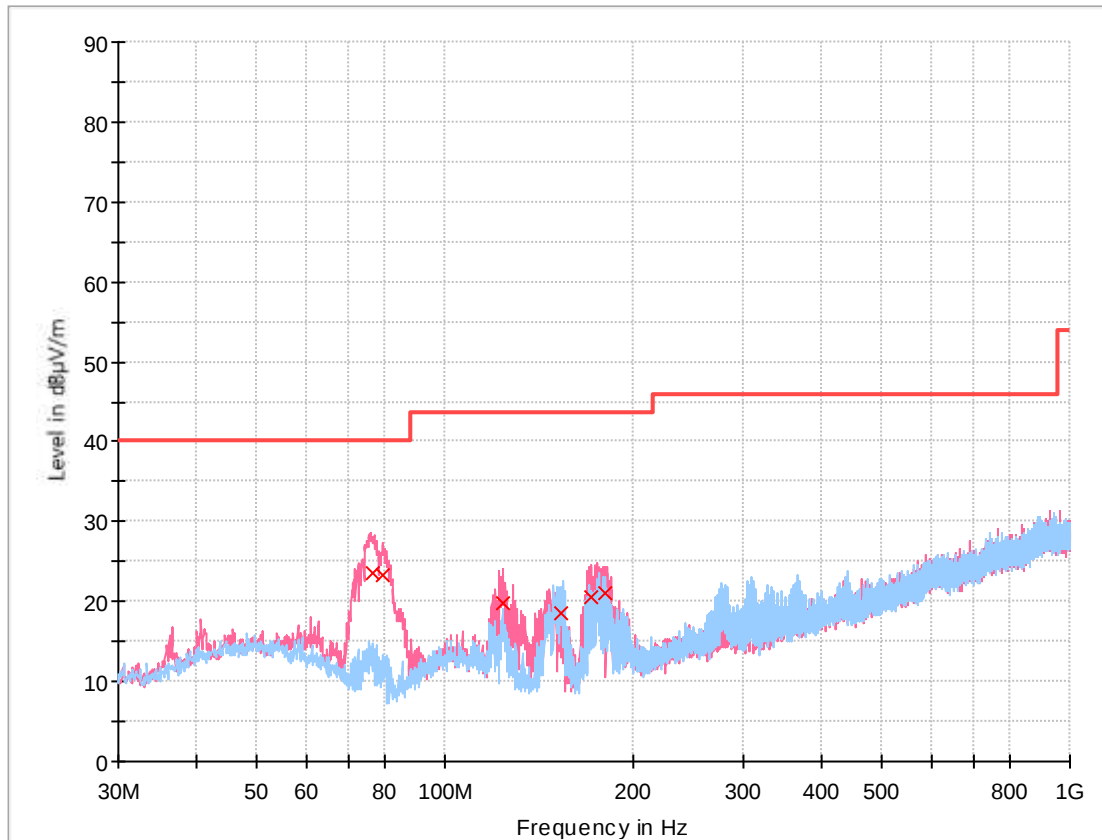
02 Mode



Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
124.169	6.90	43.50	36.60	15 000.0	120.000	150.0	V	38.0	-21.1
132.992	6.27	43.50	37.23	15 000.0	120.000	147.0	V	21.0	-21.8
136.934	6.25	43.50	37.25	15 000.0	120.000	150.0	V	342.0	-21.8
785.846	23.40	46.00	22.60	15 000.0	120.000	100.0	V	204.0	-5.2
796.573	23.68	46.00	22.32	15 000.0	120.000	100.0	V	195.0	-4.9
941.246	26.60	46.00	19.40	15 000.0	120.000	103.0	H	316.0	-3.4

03 Mode



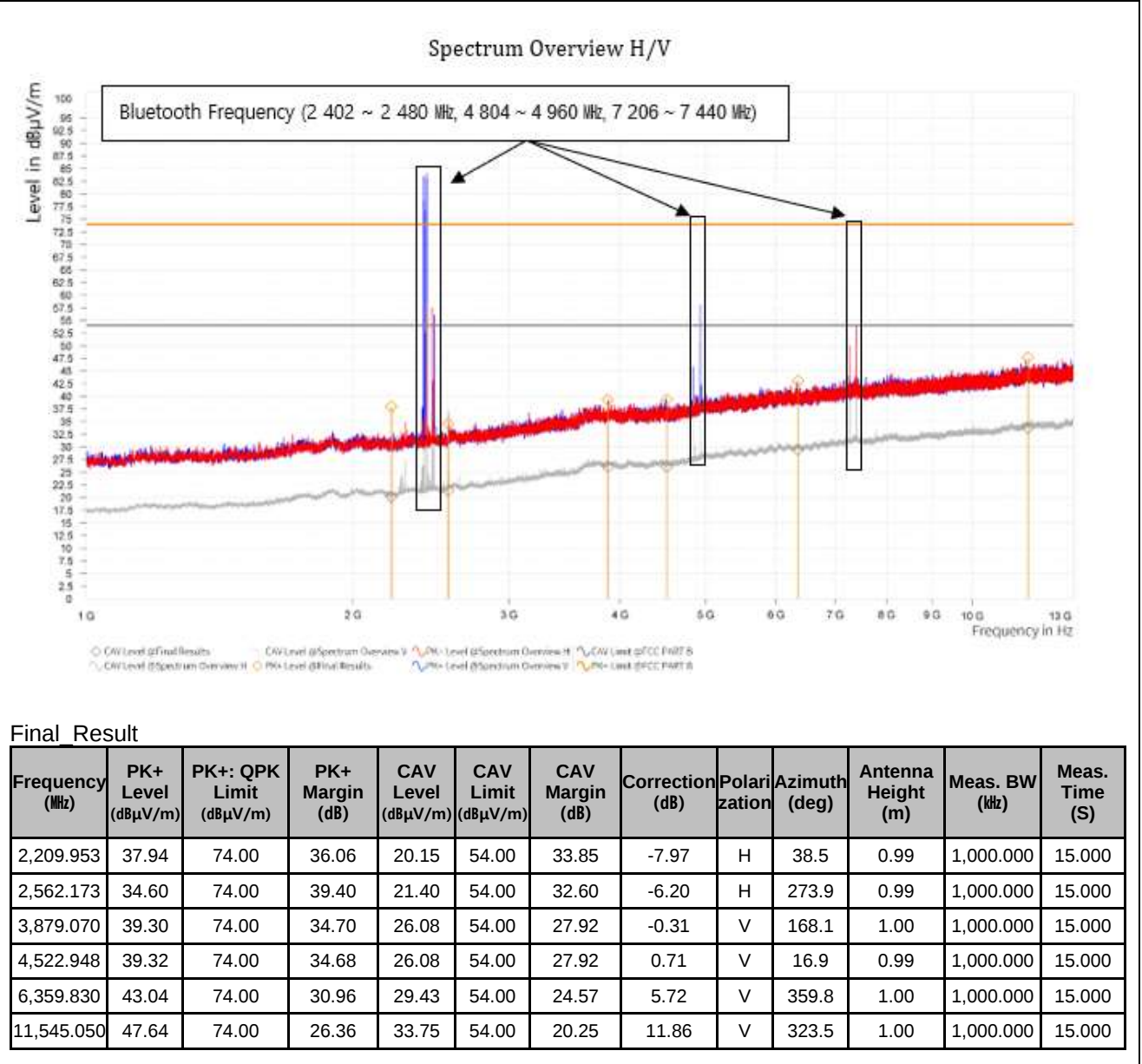
Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
76.384	23.44	40.00	16.56	15 000.0	120.000	154.0	V	77.0	-23.3
79.464	23.38	40.00	16.62	15 000.0	120.000	127.0	V	285.0	-23.5
123.559	19.82	43.50	23.68	15 000.0	120.000	103.0	V	0.0	-21.0
153.697	18.43	43.50	25.07	15 000.0	120.000	206.0	H	28.0	-21.6
170.912	20.65	43.50	22.85	15 000.0	120.000	100.0	V	327.0	-20.8
180.173	21.00	43.50	22.50	15 000.0	120.000	103.0	V	86.0	-20.3

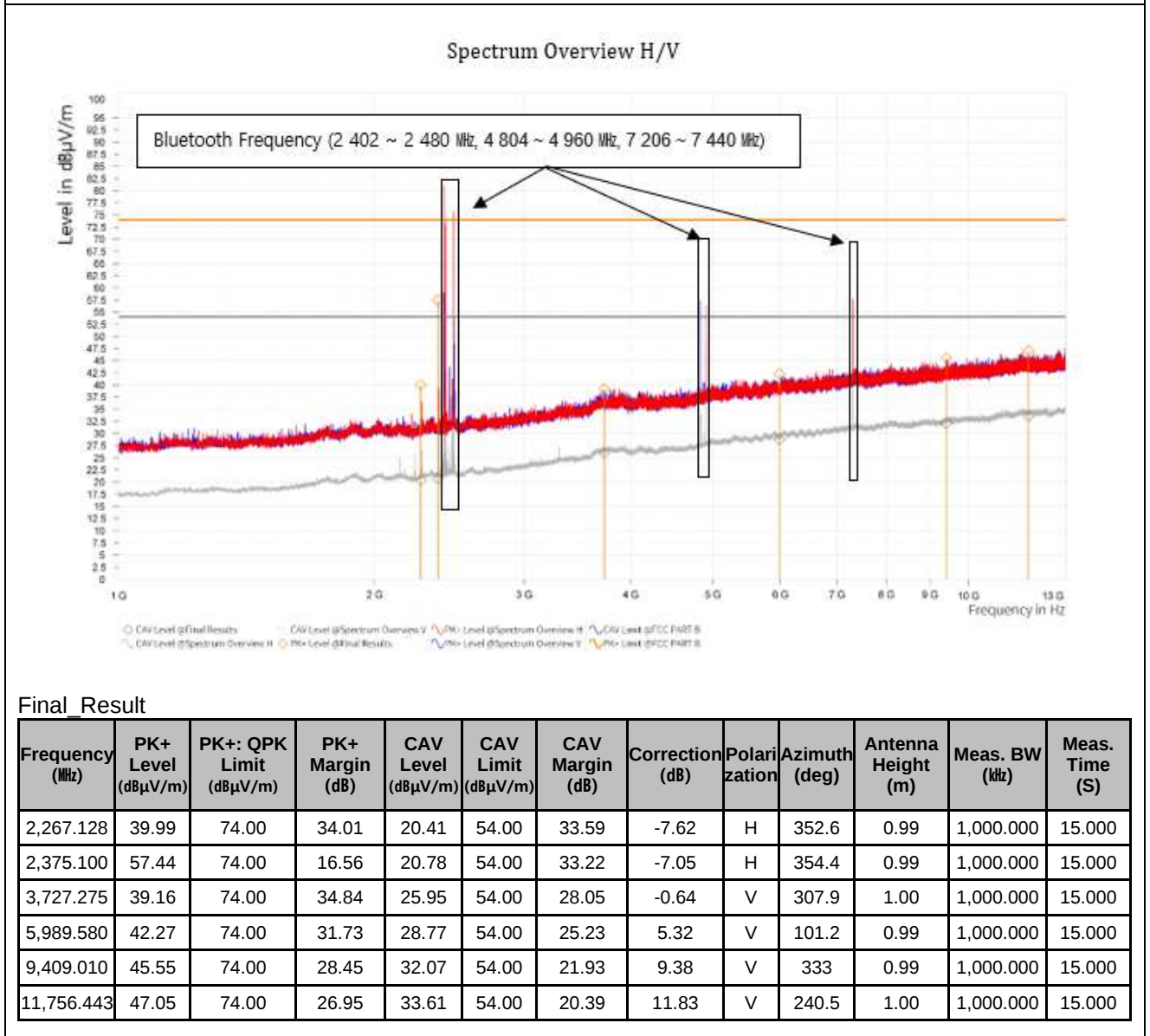
Note. Measurement Uncertainty: See Appendix A

- POL H = Horizontal
- POL V = Vertical
- Margin = Limit – Quasi Peak
- Corr. = Antenna Factor + Cable loss – Amplifier Gain

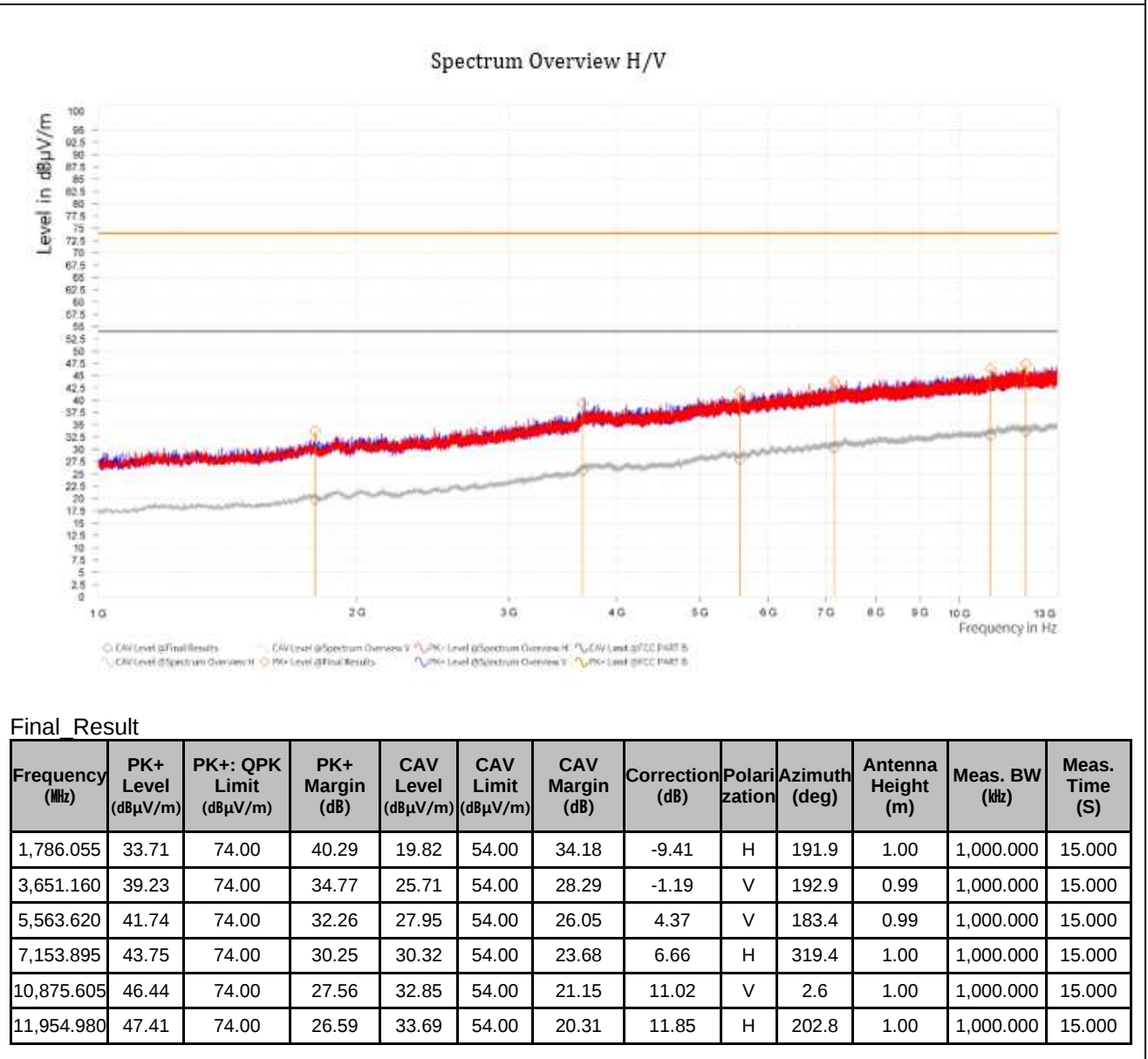
01 Mode



02 Mode



03 Mode



Note. Measurement Uncertainty: See Appendix A

- POL H = Horizontal
- POL V = Vertical
- PK = Peak
- CAV = CISPR Average
- Margin = Limit – Quasi Peak or CISRP Average
- Correction = Antenna Factor + Cable loss – Amplifier Gain

Ex) In case

Freq ; 100 MHz, level ; 30 dB(µV/m), AF ; 10 dB/m, CL ; 4 dB, Amp ; 25 dB

Result = Level + AF + CL – Amp

= 30 + 10 + 4 - 25

= 19

Margin = Limit – Result

= 43.5 – 19

= 24.5

Appendix A: Measurement Uncertainty

Test Method		Measurement Uncertainty
Conducted Emission	ENV216	3.1 dB (The confidential level is 95 %, $k=2$)
	ESH2-Z5	2.8 dB (The confidential level is 95 %, $k=2$)
	ESH3-Z6	3.0 dB (The confidential level is 95 %, $k=2$)
Conducted Emission - Signal	ISN T800	5.3 dB (The confidential level is 95 %, $k=2$)
	ISNT8-Cat6	5.4 dB (The confidential level is 95 %, $k=2$)
	ISN S751	7.1 dB (The confidential level is 95 %, $k=2$)
Disturbance Voltage at Antenna Terminal		2.2 dB (The confidential level is 95 %, $k=2$)
Radiated Emission	9 kHz - 30 MHz	Horizontal 3.6 dB (The confidential level is 95 %, $k=2$)
		Vertical 3.6 dB (The confidential level is 95 %, $k=2$)
	30 MHz - 1 000 MHz	Horizontal 4.6 dB (The confidential level is 95 %, $k=2$)
		Vertical 4.9 dB (The confidential level is 95 %, $k=2$)
	1 GHz - 18 GHz	Horizontal 3.9 dB (The confidential level is 95 %, $k=2$)
		Vertical 3.8 dB (The confidential level is 95 %, $k=2$)

Table A.1 Measurement Uncertainty of Branch Site

Test Method		Measurement Uncertainty	
Conducted Emission		ENV216	3.2 dB (The confidential level is 95 %, $k=2$)
		ESH3-Z6	3.2 dB (The confidential level is 95 %, $k=2$)
		ESH2-Z5	3.0 dB (The confidential level is 95 %, $k=2$)
		NNLK8129	3.0 dB (The confidential level is 95 %, $k=2$)
Conducted Emission - Signal		ISN T800	5.5 dB (The confidential level is 95 %, $k=2$)
		ISN ST08	6.6 dB (The confidential level is 95 %, $k=2$)
Radiated Emission	9 kHz - 30 MHz	Horizontal	3.3 dB (The confidential level is 95 %, $k=2$)
		Vertical	3.3 dB (The confidential level is 95 %, $k=2$)
	30 MHz - 1 000 MHz	Horizontal	4.3 dB (The confidential level is 95 %, $k=2$)
		Vertical	4.6 dB (The confidential level is 95 %, $k=2$)
	1 GHz - 18 GHz	Horizontal	3.9 dB (The confidential level is 95 %, $k=2$)
		Vertical	4.0 dB (The confidential level is 95 %, $k=2$)

Table A.2 Measurement Uncertainty of Branch Site-3

Test Method		Measurement Uncertainty	
Conducted Emission	ENV216	3.5 dB	(The confidential level is 95 %, $k=2$)
	ESH2-Z5	3.3 dB	(The confidential level is 95 %, $k=2$)
	ESH3-Z6	3.3 dB	(The confidential level is 95 %, $k=2$)
	NNLK8129	3.4 dB	(The confidential level is 95 %, $k=2$)
Conducted Emission - Signal	ISN T800	5.6 dB	(The confidential level is 95 %, $k=2$)
	ISN ST08	5.5 dB	(The confidential level is 95 %, $k=2$)
Radiated Emission	9 kHz - 30 MHz (Triple Loop Ant.)	3.7 dB	(The confidential level is 95 %, $k=2$)
	9 kHz - 30 MHz (Loop Ant.)	Horizontal	4.2 dB (The confidential level is 95 %, $k=2$)
		Vertical	4.2 dB (The confidential level is 95 %, $k=2$)
	30 MHz - 1 000 MHz	Horizontal	4.8 dB (The confidential level is 95 %, $k=2$)
		Vertical	5.2 dB (The confidential level is 95 %, $k=2$)
	1 GHz - 18 GHz	Horizontal	4.5 dB (The confidential level is 95 %, $k=2$)
		Vertical	4.5 dB (The confidential level is 95 %, $k=2$)

Table A.3 Measurement Uncertainty of Branch Site-4

- End of Test Report -