FCC Test Report

APPLICANT	:	Nokia Shanghai Bell Co., Ltd.
EQUIPMENT	:	NOKIA WiFi Beacon 24
BRAND NAME	:	NOKIA
MODEL NAME	:	Beacon 24
FCC ID	:	2ADZRBEACON24
STANDARD	:	47 CFR Part 15 Subpart B
CLASSIFICATION	:	Certification
TEST DATE(S)	:	Feb. 09, 2025

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI C63.4-2014 and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia

ACCREDITED
Cert #5145.02

Sporton International Inc. (Kunshan)
No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC3N0928-02	Rev. 01	Initial issue of report	Feb. 17, 2025

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 3.09 dB at 833.16 MHz for Quasi-Peak

Note : This is a variant report. The change note could be referred to the Beacon 24_Class II Permissive Change letter which is exhibit separately. According to the change, only the related test cases were verified from original report FC3N0940.

Conformity Assessment Condition:
The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account. Please refer to each test results in the section “Measurement Uncertainty”.
Disclaimer:
The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

1. General Description

1.1. Applicant

Nokia Shanghai Bell Co., Ltd.
No.388, Ningqiao Rd, Pilot Free Trade Zone, Shanghai, 201206 P.R. China

1.2. Manufacturer

Nokia of America Corporation
2301 Sugar Bush Rd. Raleigh, NC 27612

1.3. Product Feature of Equipment Under Test

Product Feature	
Equipment	NOKIA WiFi Beacon 24
Brand Name	NOKIA
Model Name	Beacon 24
FCC ID	2ADZRBEACON24
EUT supports Radios application	WLAN 2.4GHz 802.11b/g/n/ax/be WLAN 5GHz 802.11a/n/ac/ax/be WLAN 6GHz 802.11ax/be
EUT Stage	Production Unit

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Power Adapter				
AC Adapter 1	**Brand Name**	SOY	**Model Name**	SOY-1200400US-433
AC Adapter 2	**Brand Name**	MOSO	**Model Name**	MS-V4000R120-050A0-US

1.4. Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	802.11b/g/n/ax/be: 2400 MHz ~ 2483.5 MHz 802.11a/n/ac/ax/be: 5150 MHz ~ 5250 MHz; 5250 MHz ~ 5350 MHz; 5470 MHz ~ 5725 MHz; 5725 MHz ~ 5850 MHz; 802.11ax/be: 6105 MHz ~ 7125 MHz
Rx Frequency	802.11b/g/n/ax/be: 2400 MHz ~ 2483.5 MHz 802.11a/n/ac/ax/be: 5150 MHz ~ 5250 MHz; 5250 MHz ~ 5350 MHz; 5470 MHz ~ 5725 MHz; 5725 MHz ~ 5850 MHz; 802.11ax/be: 6105 MHz ~ 7125 MHz
Antenna Type	WLAN 2.4GHz/5GHz: Dipole Antenna WLAN 6GHz: PCB Antenna
Type of Modulation	802.11b: DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM) 802.11ax: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM /1024QAM) 802.11be: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM / 1024QAM / 4096QAM)

1.5. Modification of EUT

No modifications are made to the EUT during all test items.

1.6. Test Location

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH02-KS	CN1257	314309

1.7. Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH02-KS	AUDIX	E3	6.2009-8-24al

1.8. Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 15 Subpart B
- ANSI C63.4-2014

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

2. Test Configuration of Equipment Under Test

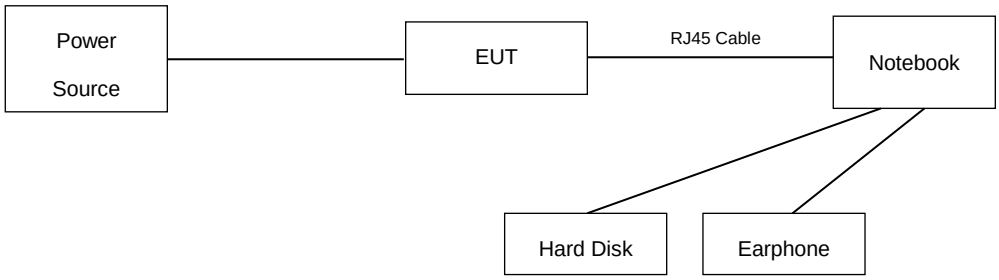
2.1. Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2014 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Frequency range investigated: radiation emission (30MHz to the 5th harmonic of the highest frequency or to 40 GHz, whichever is lower).

Test Items	Function Type
Radiated Emissions	Mode 1: WLAN (2.4GHz) Idle + WLAN (5GHz) Idle + WLAN (6GHz) Idle + LAN Link with Notebook + Power from Adapter 1

2.2. Connection Diagram of Test System



This example is connection diagram of EUT test configurations.

For detail, please refer to test mode configuration and setup photographs for each test item.

The EUT has been associated with peripherals pursuant to ANSI C63.4-2014 and configuration operated in a manner tended to maximize its emission characteristics in a typical application

2.3. Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	Lenovo	G480	N/A	N/A	shielded cable DC O/P 1.8m , Unshielded AC I/P cable 1.8m
2.	Notebook	acer	N20C5	QDS-BRCM1050I	N/A	shielded cable DC O/P 1.8m , Unshielded AC I/P cable 1.8m
3.	Hard disk	KINGSHARE	KSP6120G	N/A	N/A	N/A
4.	Earphone	N/A	N/A	N/A	N/A	N/A
5.	RJ45 Cable	N/A	N/A	N/A	N/A	N/A

2.4. EUT Operation Test Setup

EUT links with Notebook and executes LAN Test Tool via RJ-45 Cable.

3. Test Result

3.1. Test of Radiated Emission Measurement

3.1.1. Limit of Radiated Emission

The emissions from an unintentional radiator shall not exceed the field strength levels specified in the following table:

<Class B Limit>

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.1.2. Measuring Instruments

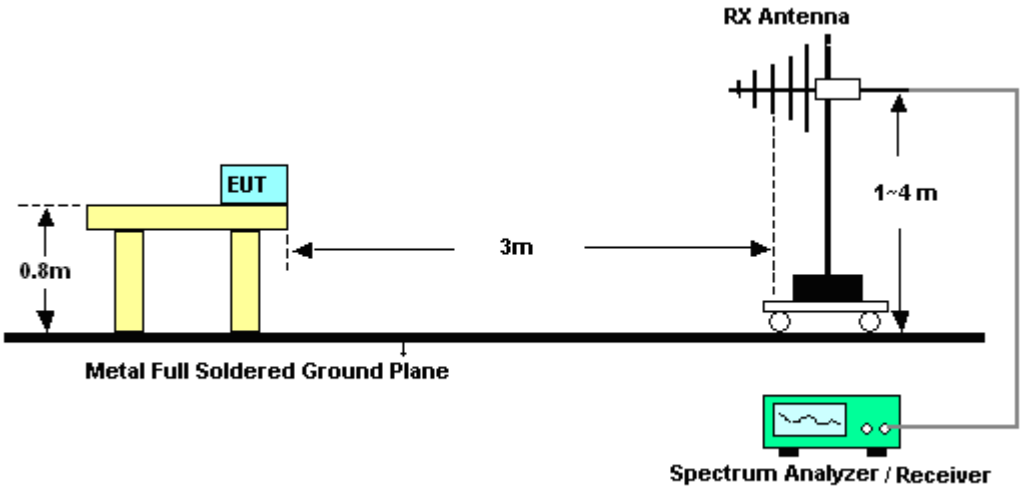
The measuring equipment is listed in the section 4 of this test report.

3.1.3. Test Procedures

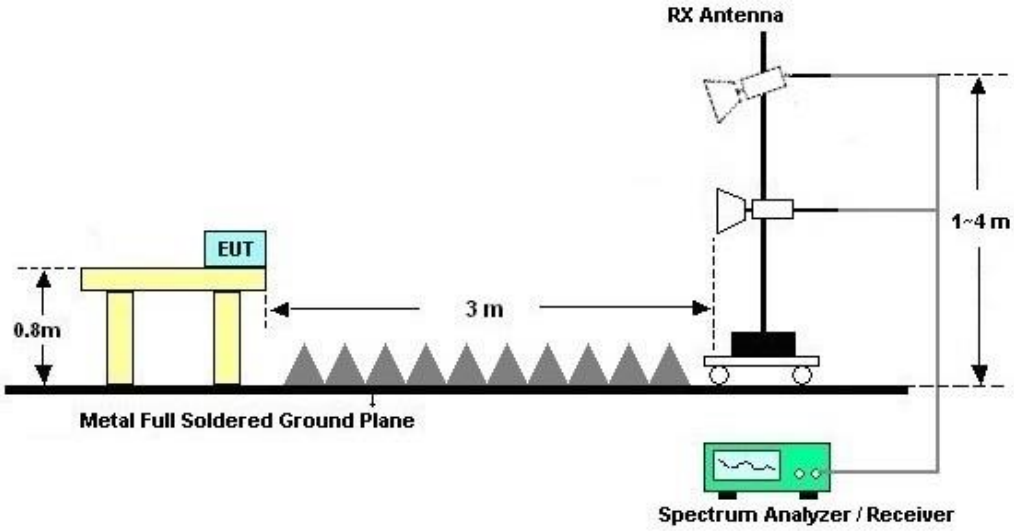
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a Bi-Log antenna and its height is adjusted between one to four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode (RBW=120kHz/VBW=300kHz for frequency below 1GHz; RBW=1MHz VBW=3MHz (Peak), RBW=1MHz/VBW=10Hz (Average) for frequency above 1GHz).
7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, peak values of EUT will be reported. Otherwise, the emission will be repeated by using the quasi-peak method and reported.
8. Emission level (dBμV/m) = 20 log Emission level (μV/m)
9. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
10. Exploratory radiated emissions testing of handheld and/or body-worn devices shall include rotation of the EUT through three orthogonal axes (X/Y/Z Plane) to determine the orientation (attitude) that maximizes the emissions.

3.1.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz

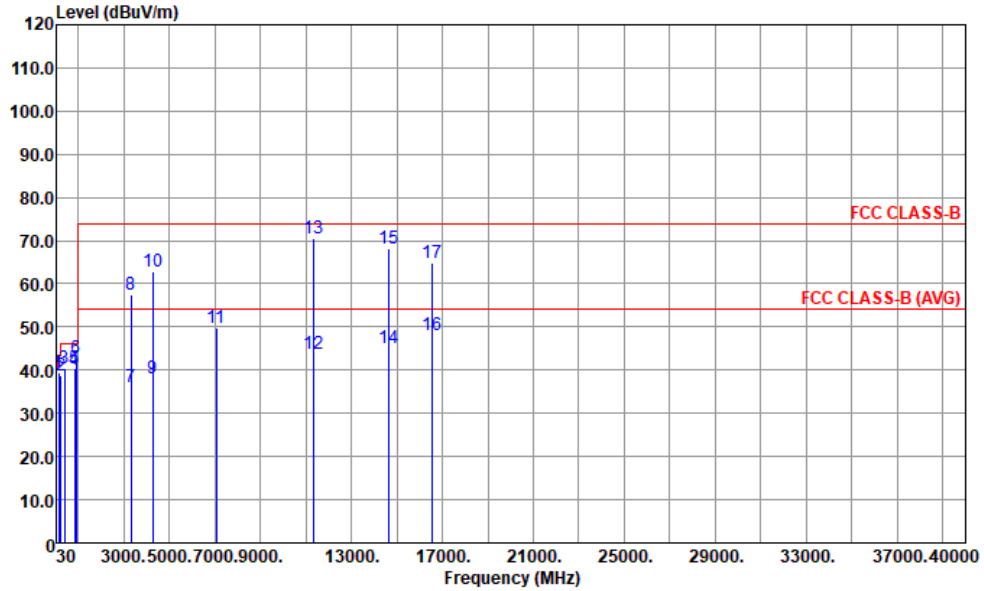


For radiated emissions above 1GHz



3.1.5. Test Result of Radiated Emission

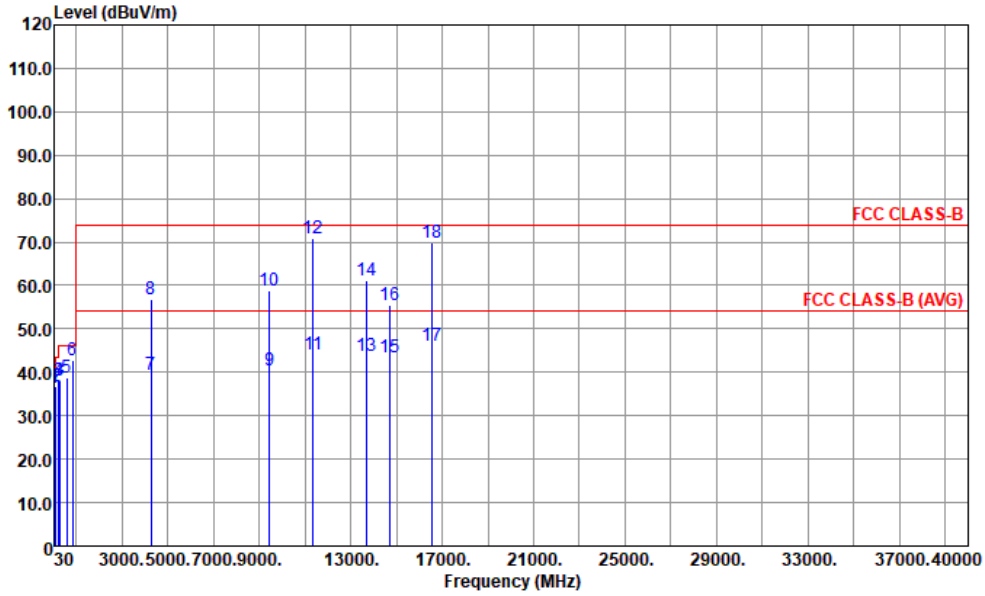
Test Engineer :	Fang	**Temperature :**	21~22°C
		Relative Humidity :	41~42%
Test Distance :	3m	**Polarization :**	Horizontal



Site : 03CH02-KS
Condition : FCC CLASS-B 3m 3117 SN00240132 HORIZONTAL

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		140.58	39.49	-4.01	43.50	53.66	17.37	1.16	32.70	---	---	Peak
2		244.37	38.70	-7.30	46.00	52.22	17.71	1.65	32.88	100	185	QP
3		387.93	40.43	-5.57	46.00	49.97	21.32	2.13	32.99	---	---	Peak
4		824.43	40.06	-5.94	46.00	41.32	28.56	2.98	32.80	200	185	QP
5	q	833.16	40.34	-5.66	46.00	41.28	28.77	3.01	32.72	200	285	QP
6	p	907.85	42.64	-3.36	46.00	42.46	29.28	3.13	32.23	---	---	Peak
7		3312.00	36.01	-17.99	54.00	57.49	32.90	8.80	63.18	183	34	Average
8		3312.00	57.57	-16.43	74.00	79.05	32.90	8.80	63.18	183	34	Peak
9		4264.00	37.99	-16.01	54.00	58.33	33.50	10.04	63.88	208	141	Average
10		4264.00	62.93	-11.07	74.00	83.27	33.50	10.04	63.88	208	141	Peak
11		7052.00	49.68	-24.32	74.00	64.99	35.60	13.21	64.12	---	---	Peak
12		11336.00	43.93	-10.07	54.00	50.47	38.13	16.94	61.61	200	98	Average
13		11336.00	70.44	-3.56	74.00	76.98	38.13	16.94	61.61	200	98	Peak
14		14668.00	45.22	-8.78	54.00	48.32	39.90	19.32	62.32	200	196	Average
15		14668.00	68.23	-5.77	74.00	71.33	39.90	19.32	62.32	200	196	Peak
16	a	16538.00	48.12	-5.88	54.00	48.74	41.41	20.72	62.75	100	272	Average
17		16538.00	64.95	-9.05	74.00	65.57	41.41	20.72	62.75	100	172	Peak

Test Engineer :	Fang	**Temperature :**	21~22°C
		Relative Humidity :	41~42%
Test Distance :	3m	**Polarization :**	Vertical



Site : 03CH02-KS
Condition : FCC CLASS-B 3m 3117 SN00240132 VERTICAL

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		62.98	36.34	-3.66	40.00	56.37	11.89	0.80	32.72	---	---	Peak
2		107.60	36.91	-6.59	43.50	51.70	16.82	1.05	32.66	---	---	Peak
3		235.64	37.99	-8.01	46.00	52.32	16.87	1.65	32.85	200	185	QP
4		256.98	38.21	-7.79	46.00	49.79	19.59	1.71	32.88	100	185	QP
5		573.20	38.79	-7.21	46.00	43.29	26.25	2.51	33.26	100	182	QP
6	q	833.16	42.91	-3.09	46.00	43.85	28.77	3.01	32.72	100	185	QP
7		4264.00	39.55	-14.45	54.00	59.89	33.50	10.04	63.88	100	196	Average
8		4264.00	56.77	-17.23	74.00	77.11	33.50	10.04	63.88	100	196	Peak
9		9466.00	40.59	-13.41	54.00	50.93	36.63	15.76	62.73	105	331	Average
10		9466.00	58.85	-15.15	74.00	69.19	36.63	15.76	62.73	105	331	Peak
11		11353.00	43.97	-10.03	54.00	50.47	38.14	16.96	61.60	100	281	Average
12	p	11353.00	71.02	-2.98	74.00	77.52	38.14	16.96	61.60	100	281	Peak
13		13716.00	43.66	-10.34	54.00	47.86	39.21	18.78	62.19	204	74	Average
14		13716.00	61.23	-12.77	74.00	65.43	39.21	18.78	62.19	204	74	Peak
15		14719.00	43.49	-10.51	54.00	46.55	39.96	19.34	62.36	100	96	Average
16		14719.00	55.63	-18.37	74.00	58.69	39.96	19.34	62.36	100	96	Peak
17	a	16538.00	46.19	-7.81	54.00	46.81	41.41	20.72	62.75	103	256	Average
18		16538.00	69.80	-4.20	74.00	70.42	41.41	20.72	62.75	103	256	Peak

Note:

1. Level(dBμV/m) = Read Level(dBμV) + Antenna Factor(dB/m) + Cable Loss(dB) - Preamp Factor(dB)
2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Max 30dBm	Oct. 11, 2024	Feb. 09, 2025	Oct. 10, 2025	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55370528	10Hz-44G,MAX 30dB	Oct. 11, 2024	Feb. 09, 2025	Oct. 10, 2025	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6111D	59915	30MHz-1GHz	Aug. 18, 2024	Feb. 09, 2025	Aug. 17, 2025	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75959	1GHz~18GHz	Mar. 01, 2024	Feb. 09, 2025	Feb. 28, 2025	Radiation (03CH02-KS)
SHF-EHF Horn	Com-power	AH-840	101115	18GHz~40GHz	Oct. 22, 2024	Feb. 09, 2025	Oct. 21, 2025	Radiation (03CH02-KS)
Amplifier	EM	EM18G40GA	060852	18~40GHz	Jan. 03, 2025	Feb. 09, 2025	Jan. 02, 2026	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	413740	9KHz-1GHz	Jan. 02, 2025	Feb. 09, 2025	Jan. 01, 2026	Radiation (03CH02-KS)
Amplifier	EM	EM01G18G	060840	1Ghz-18Ghz	Oct. 09, 2024	Feb. 09, 2025	Oct. 08, 2025	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Feb. 09, 2025	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Feb. 09, 2025	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Feb. 09, 2025	NCR	Radiation (03CH02-KS)

NCR: No Calibration Required

5. Measurement Uncertainty

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**6.04 dB**

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.12 dB**

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.30 dB**

---------- THE END ----------