TEST REPORT

REGULATIONS : FCC Part15 C §15.247(d), §15.209(d), §15.205
RSS-247 Issue 2

Spurious Emissions

Applicant	Testing Laboratory
YOKOTA INDUSTRIAL CO., LTD. 5-55 Nishiiwata, 3-shime, Higashiosaka-City, Osaka, 578-0947 Japan Tel.: +81 6 6788 1267 / Fax.: +81 6 6788 5953	Intertek Japan K.K. Matsuda Laboratory (Open area test site) 1283 Yadoriki, Matsuda-machi, Ashigarakami-gun, Kanagawa-ken, 258-0001 Japan Tel.: +81 465 89 2316 Fax.: +81 465 89 2160 URL: http://www.japan.intertek-etlsemko.com

Equipment Type	Battery Impulse Wrench
Trademark	Yokota
Model(s)	YS-e950
Serial No.	0R0180
FCC ID	2AMNN-YSE68995-01
ISED CN and UPN	22912-YSE6899501
Test Result	Complied
Report Number	17050260JMA-001
Original Issue Date	August 23, 2018

Approved by H. Kosemura
Hideaki Kosemura
[Reviewer]

Tested by N. Murakami
Naohei Murakami
[Engineer]

VLAC-008-3

Responsible Party of Test Item (Product)

Responsible Party	:
Add.	:
Tel.	:
Fax.	:
Contact Person	:

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SECTION 1. GENERAL INFORMATION

Test Performed

EUT Received	September 19, 2017	
Date of Test	From May 29, 2018 to June 7, 2018	
Standard Applied	FCC	ISED
	FCC Part15 C (§15.247, §15.209)	RSS-247 Issue 2
Test methods	ANSI C63.10-2013	RSS-Gen Issue 5 ANSI C63.10-2013
Deviation from Standard(s)	None	

Qualifications of Testing Laboratory

Accreditation	**Scope**	**Lab. Code**	**Remarks**
VLAC	EMC Testing	VLAC-008-3	JAPAN
BSMI	EMC Testing	SL2-IN-E-6009	TAIWAN
Filing			
VCCI	EMC Testing	A-0127	JAPAN
FCC	EMC Testing	Designation Number : JP0009	USA
IC	EMC Testing	2042S-1, 2042S-2, 2042S-3	Canada
CB-Scheme	EMC Testing	TL223	IECEE
SAUDI ARABIA	EMC Testing	N/A	

Abbreviations

EUT	Equipment Under Test	DoC	Declaration of Conformity
AMN	Artificial Mains Network	ISN	Impedance Stabilization Network
LISN	Line Impedance Stabilization Network	Q-P	Quasi-peak
AMP	Amplifier	AVG	Average
ATT	Attenuator	PK	Peak
ANT	Antenna	Cal	Calibration
BBA	Broadband Antenna	N/A	Not applicable or Not available
DIP	Dipole Antenna	LCD	Liquid-Crystal Display
AE	Associated Equipment	HDMI	High-Definition Multimedia Interface
AFH	Adaptive Hopping Frequency		

SECTION 2. SUMMARY OF TEST RESULTS

Test Item	Specification	Results	Detail
Radiated Spurious Emissions	FCC Part15C §15.209, §15.205 RSS-247 Issue 2 (5.5) RSS-Gen Issue 5 (8.9)	PASS	Section 9.1
Receiver Spurious Emissions	RSS-Gen Issue 5 (7.3)	PASS	Section 9.2

Limitation on Results

The test result of this report is effective equipment under test itself and under the test configuration described on the report.
This test report does not assure that whether the test result taken in other testing laboratory is compatible or reproducible to the test result on this report or not.

SECTION 3. EQUIPMENT UNDER TEST

The equipment under test (EUT) consisted of the following apparatus.

3.1 System Configuration

Symbol	Item	Model No.	Serial No.	Manufacturer
A	Battery Impulse Wrench	YS-e950	0R0180	Yokota Industrial Co., Ltd.

Rated Power	DC18 V, 2.0 Ah (Battery)
Supplied Power	DC18 V
Condition of Equipment	Prototype
Type	Handheld type
Suppression Devices	No Modifications by the laboratory were made to the device

3.2 Port(s)/Connector(s)

Port Name	Connector Type	Connector Pin	Remarks
–	-	-	-

3.3 Over View of EUT

Wireless LAN Module	XBEES6B
Manufacturer	Digi International Inc.
Access method	WLAN 802.11b/g/n20
Rated Output Power	11b 13 dBm
	11g 13 dBm
	11n20 13 dBm
Frequency Range of Operating	2412 – 2462 MHz
Number of Channels	11 ch, 5 MHz step
Modulation Method	DSSS, OFDM
Antenna Gain	1.5 dBi

SECTION 4. SUPPORT EQUIPMENT

The EUT was supported by the following equipment during the test.

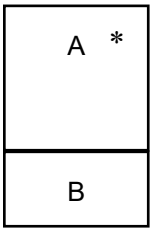
Symbol	Item	Model No.	Serial No.	Manufacturer	FCC ID
B	BATTERY PACK	BPL-1820	None	Yokota Industrial Co., Ltd.	N/A

SECTION 5. USED CABLE(S)

No cable was provided for the test.

SECTION 6. TEST CONFIGURATION

＊: EUT
■: Ferrite core



The symbols and numbers assigned to the equipment and cables on this diagram correspond to the ones in Sections 3 to 5.

SECTION 7. OPERATING CONDITION

The test was carried out under the following mode.

Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

7.1 Test Channel

In accordance with Section 15.31 (m), all test items was conducted in the following three channels:

Operating mode	Test Channel	Frequency [MHz]
WLAN 802.11b/g/n20	Low	2412
	Middle	2437
	High	2462

7.2 Test modes

Test Item	Operating modes
Radiated Spurious Emissions	2412MHz, 2437MHz, 2462MHz
Receiver Spurious Emissions	2412MHz, 2437MHz, 2462MHz

Note: The Test modes were configured in typical fashion as a customer would normally use it.
*1 : Highest output power, the mode was tested as a representative,

SECTION 8. UNCERTAINTY

The following uncertainty represents the expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.
Traceability to national standard in SI units is ensured with these values.
Compliance with the limits in this standard are determined without in consideration of the measurement uncertainty of the measurement instrumentation.

8.1 Emission tests

Test items	U_{lab} [k = 2]	U_{cispr}
Radiated Spurious Emissions at 3m		
30 MHz – 1000 MHz	+/- 5.08 dB	6.3 dB
Above 1 GHz	+/- 4.82 dB	5.2 dB

The above expanded instrumentation uncertainty, $U_{lab.}$, is estimated in accordance with CISPR 16-4-2:2011.

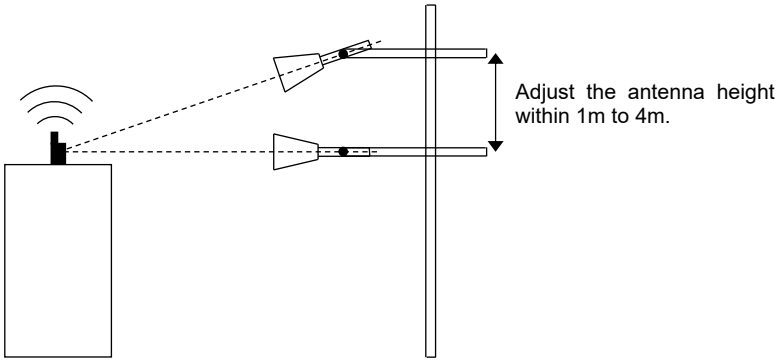
SECTION 9. TEST DATA

9.1 Radiated Spurious Emissions and Band Edge of Restrict Band

Regulations	FCC Part15C §15.209, §15.205 RSS-247 5.5 RSS-Gen 8.9
Test Method/Guide	ANSI C63.10-2013 clause 6.5 and 6.6

Test Procedure

1. The EUT and test instrument were set up as shown on section 10.2.
2. The measurement antenna was placed at a distance of 3 m from the EUT.
4. The turntable azimuth (EUT direction, 0 – 360 degree) and antenna height (1 – 4 m) are adjusted the position so that maximum field strength is obtained for each frequency spectrum to be measured.
   The equipment and cables are arranged or manipulated within the range of the test standard in the above condition. At least six highest spectrums are measured by the test receiver (below 1 GHz) and spectrum analyzer (above 1 GHz).
   For measurements above 1GHz, the emission signal shall be kept within the illumination area of the 3 dB beam width of the antenna so that the maximum emission from the EUT is measured.
   And the antenna angle toward the source of the emission.



5. Adjust the test instrument for the following setting:

Frequency	Instruments	Detector	RBW	VBW	Remarks
30 – 1000 MHz	CISPR Receiver	QP	120 kHz	N/A	-
Above 1000 MHz	Spectrum Analyzer	Peak	1 MHz	3 MHz	for Peak
		Average		10 Hz	for Average

6. Measurement data correction;

   Emission Level [dBuV/m] = Reading [dBuV] + Factor [dB/m]

   Margin [dB] = Limit [dBuV/m] – Emission Level [dBuV/m]

   * Factor = Antenna Factor + Amplifier gain + Cable loss + Attenuator (+ Filter)
   (+ Distance Conversion Factor)*

   * For other than Standard distance:
   Distance Conversion Factor = 20 log (Measurement distance / Standard distance)

Note: Did not carried out the fainal measurement about frequency range of 9 kHz to 30 MHz, because result of pre-check in shield room, spurious emissions was not detected.

Test Result

Operating mode	WLAN 802.11b, 2412 MHz, EUT axis: X			
Location	Matsuda Laboratory No.2 Test Site	Matsuda Laboratory No.1 Test Site		
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz	
Test date	May 29, 2018	June 7, 2018	May 16, 2018	
Temperature	26.0	25.5	23.5	[degree C]
Humidity variation	62	49	52	[%]
Test Engineer	Naohei Murakami			

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hor	Ver		Hor	Ver		Hor	Ver
1	50.800	QuasiPeak	41.1	41.0	3.3	44.4	44.3	74	29.6	29.8
2	1458.000	Peak	28.1	28.5	3.3	31.4	31.8	54	22.7	22.2
3	1458.000	Average	40.8	41.7	4.4	45.2	46.1	74	28.9	27.9
4	1608.000	Peak	28.1	28.6	4.4	32.5	33.0	54	21.5	21.0
5	1608.000	Average	40.3	40.0	8.1	48.4	48.1	74	25.6	25.9
6	2080.000	Peak	28.1	27.2	8.1	36.2	35.3	54	17.8	18.7
7	2080.000	Average	40.8	41.1	10.6	51.4	51.7	74	22.6	22.3
8	3216.000	Peak	28.8	28.9	10.6	39.4	39.5	54	14.6	14.5
9	3216.000	Average	42.0	43.0	14.3	56.3	57.3	74	17.7	16.7
10	4824.000	Peak	28.8	28.7	14.3	43.1	43.0	54	10.9	11.0
11	4824.000	Average	41.0	41.5	19.9	60.9	61.4	74	13.1	12.6
12	7236.000	Peak	29.2	29.3	19.9	49.1	49.2	54	4.9	4.8
13	7236.000	Average	41.1	41.0	3.3	44.4	44.3	74	29.6	29.8

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]		Margin [dB]	
			Hor	Ver		Hor	Ver	Hor	Ver	Hor	Ver
1*	2412.000	Peak	89.0	84.3	7.4	96.4	91.7	-	-	-	-
2*	2390.000	Peak	37.1	36.7	7.4	44.5	44.1	76.4	71.7	31.9	27.6
3*	2400.000	Peak	41.0	40.3	7.4	48.4	47.7	76.4	71.7	27.9	24.0
4*	2483.500	Peak	38.6	43.0	7.6	46.2	50.6	76.4	71.7	30.2	21.2

Note.
* : Band Edge of Restrict Band
- : Measurement limit
The limit value is -20dBc from the detected the carrier power.

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

Operating mode	WLAN 802.11b, 2437 MHz, EUT axis: X			
Location	Matsuda Laboratory No.2 Test Site	Matsuda Laboratory No.1 Test Site		
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz	
Test date	May 29, 2018	June 7, 2018	May 16, 2018	
Temperature	26.0	25.5	23.5	[degree C]
Humidity variation	62	49	52	[%]
Test Engineer	Naohei Murakami			

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hor	Ver		Hor	Ver		Hor	Ver
1	50.800	QuasiPeak	23.6	28.5	-6.3	17.3	22.2	40	22.7	17.8
2	1458.000	Peak	40.8	41.3	3.3	44.1	44.6	74	30.0	29.4
3	1458.000	Average	27.4	27.7	3.3	30.7	31.0	54	23.3	23.0
4	1608.000	Peak	40.7	40.9	4.4	45.1	45.3	74	28.9	28.7
5	1608.000	Average	28.0	28.7	4.4	32.4	33.1	54	21.6	20.9
6	2080.000	Peak	39.6	39.8	8.1	47.7	47.9	74	26.3	26.1
7	2080.000	Average	26.6	27.7	8.1	34.7	35.8	54	19.3	18.2
8	3216.000	Peak	41.5	44.0	10.6	52.1	54.6	74	21.9	19.4
9	3216.000	Average	27.3	28.2	10.6	37.9	38.8	54	16.1	15.2
10	4874.000	Peak	41.7	42.8	14.5	56.2	57.3	74	17.9	16.7
11	4874.000	Average	29.6	30.2	14.5	44.1	44.7	54	9.9	9.3
12	7311.000	Peak	41.2	40.8	20.0	61.2	60.8	74	12.8	13.3
13	7311.000	Average	28.7	29.0	20.0	48.7	49.0	54	5.3	5.0

Note.

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

Operating mode	WLAN 802.11b, 2462 MHz, EUT axis: X			
Location	Matsuda Laboratory No.2 Test Site	Matsuda Laboratory No.1 Test Site		
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz	
Test date	May 29, 2018	June 7, 2018	May 16, 2018	
Temperature	26.0	25.5	23.5	[degree C]
Humidity variation	62	49	52	[%]
Test Engineer	Naohei Murakami			

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hor	Ver		Hor	Ver		Hor	Ver
1	50.800	QuasiPeak	23.6	28.7	-6.3	17.3	22.4	40	22.7	17.6
2	1458.000	Peak	40.6	40.7	3.3	43.9	44.0	74	30.1	30.0
3	1458.000	Average	28.4	29.0	3.3	31.7	32.3	54	22.3	21.7
4	1608.000	Peak	40.9	40.8	4.4	45.3	45.2	74	28.7	28.8
5	1608.000	Average	28.6	28.4	4.4	33.0	32.8	54	21.0	21.2
6	2080.000	Peak	40.9	40.7	8.1	49.0	48.8	74	25.0	25.2
7	2080.000	Average	27.6	27.8	8.1	35.7	35.9	54	18.3	18.1
8	3216.000	Peak	41.3	41.1	10.6	51.9	51.7	74	22.1	22.3
9	3216.000	Average	29.0	28.5	10.6	39.6	39.1	54	14.4	14.9
10	4924.000	Peak	41.9	42.5	14.5	56.4	57.0	74	17.6	17.0
11	4924.000	Average	29.6	28.6	14.5	44.1	43.1	54	9.9	10.9
12	7386.000	Peak	41.6	41.5	20.2	61.8	61.7	74	12.2	12.4
13	7386.000	Average	29.4	29.5	20.2	49.6	49.7	54	4.4	4.3

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]		Margin [dB]	
			Hor	Ver		Hor	Ver	Hor	Ver	Hor	Ver
1*	2462.000	Peak	90.0	86.0	7.5	97.5	93.5	-	-	-	-
2*	2390.000	Peak	38.3	36.8	7.4	45.7	44.2	77.5	73.5	31.8	29.3
3*	2400.000	Peak	37.1	37.9	7.4	44.5	45.3	77.5	73.5	33.0	28.2
4*	2483.500	Peak	40.7	38.0	7.6	48.3	45.6	77.5	73.5	29.3	27.9

Note.
* : Band Edge of Restrict Band
- : Measurement limit
The limit value is -20dBc from the detected the carrier power.

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

Operating mode	WLAN 802.11g, 2412 MHz, EUT axis: X			
Location	Matsuda Laboratory No.2 Test Site	Matsuda Laboratory No.1 Test Site		
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz	
Test date	May 29, 2018	June 7, 2018	May 16, 2018	
Temperature	26.0	25.5	23.5	[degree C]
Humidity variation	62	49	52	[%]
Test Engineer	Naohei Murakami			

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hor	Ver		Hor	Ver		Hor	Ver
1	50.800	QuasiPeak	23.5	28.8	-6.3	17.2	22.5	40	22.8	17.5
2	1458.000	Peak	40.6	40.9	3.3	43.9	44.2	74	30.1	29.8
3	1458.000	Average	28.3	28.5	3.3	31.6	31.8	54	22.4	22.3
4	1608.000	Peak	41.1	41.6	4.4	45.5	46.0	74	28.5	28.1
5	1608.000	Average	28.1	28.3	4.4	32.5	32.7	54	21.5	21.3
6	2080.000	Peak	40.3	41.1	8.1	48.4	49.2	74	25.6	24.8
7	2080.000	Average	28.4	27.6	8.1	36.5	35.7	54	17.5	18.3
8	3216.000	Peak	41.0	41.2	10.6	51.6	51.8	74	22.4	22.2
9	3216.000	Average	27.4	28.3	10.6	38.0	38.9	54	16.0	15.1
10	4824.000	Peak	41.8	43.1	14.3	56.1	57.4	74	17.9	16.6
11	4824.000	Average	29.8	30.2	14.3	44.1	44.5	54	9.9	9.5
12	7236.000	Peak	42.5	41.5	19.9	62.4	61.4	74	11.6	12.6
13	7236.000	Average	29.3	28.2	19.9	49.2	48.1	54	4.8	5.9

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]		Margin [dB]	
			Hor	Ver		Hor	Ver	Hor	Ver	Hor	Ver
1*	2412.000	Peak	90.4	86.1	7.4	97.8	93.5	-	-	-	-
2*	2390.000	Peak	48.5	42.0	7.4	55.9	49.4	77.8	73.5	21.9	24.1
3*	2400.000	Peak	63.7	60.9	7.4	71.1	68.3	77.8	73.5	6.7	5.2
4*	2483.500	Peak	38.4	37.5	7.6	46.0	45.1	77.8	73.5	31.8	28.4

Note.
* : Band Edge of Restrict Band
- : Measurement limit
The limit value is -20dBc from the detected the carrier power.

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

Operating mode	WLAN 802.11g, 2437 MHz, EUT axis: X			
Location	Matsuda Laboratory No.2 Test Site	Matsuda Laboratory No.1 Test Site		
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz	
Test date	May 29, 2018	June 7, 2018	May 16, 2018	
Temperature	26.0	25.5	23.5	[degree C]
Humidity variation	62	49	52	[%]
Test Engineer	Naohei Murakami			

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hor	Ver		Hor	Ver		Hor	Ver
1	50.800	QuasiPeak	23.2	28.2	-6.3	16.9	21.9	40	23.1	18.1
2	1458.000	Peak	41.3	40.5	3.3	44.6	43.8	74	29.4	30.2
3	1458.000	Average	28.4	28.0	3.3	31.7	31.3	54	22.3	22.7
4	1608.000	Peak	40.0	40.8	4.4	44.4	45.2	74	29.6	28.9
5	1608.000	Average	27.4	27.9	4.4	31.8	32.3	54	22.2	21.7
6	2080.000	Peak	39.8	41.2	8.1	47.9	49.3	74	26.1	24.7
7	2080.000	Average	27.7	27.7	8.1	35.8	35.8	54	18.2	18.3
8	3216.000	Peak	40.8	40.7	10.6	51.4	51.3	74	22.6	22.7
9	3216.000	Average	27.6	29.1	10.6	38.2	39.7	54	15.9	14.3
10	4874.000	Peak	42.2	42.7	14.5	56.7	57.2	74	17.3	16.9
11	4874.000	Average	29.2	29.1	14.5	43.7	43.6	54	10.3	10.4
12	7311.000	Peak	42.0	40.8	20.0	62.0	60.8	74	12.0	13.2
13	7311.000	Average	29.6	29.5	20.0	49.6	49.5	54	4.4	4.5

Note.

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

Operating mode	WLAN 802.11g, 2462 MHz, EUT axis: X			
Location	Matsuda Laboratory No.2 Test Site	Matsuda Laboratory No.1 Test Site		
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz	
Test date	May 29, 2018	June 7, 2018	May 16, 2018	
Temperature	26.0	25.5	23.5	[degree C]
Humidity variation	62	49	52	[%]
Test Engineer	Naohei Murakami			

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hor	Ver		Hor	Ver		Hor	Ver
1	50.800	QuasiPeak	23.3	28.5	-6.3	17.0	22.2	40	23.0	17.8
2	1458.000	Peak	40.5	41.2	3.3	43.8	44.5	74	30.2	29.5
3	1458.000	Average	28.8	28.9	3.3	32.1	32.2	54	21.9	21.8
4	1608.000	Peak	40.9	40.7	4.4	45.3	45.1	74	28.8	28.9
5	1608.000	Average	27.5	27.4	4.4	31.9	31.8	54	22.1	22.2
6	2080.000	Peak	40.3	40.9	8.1	48.4	49.0	74	25.6	25.0
7	2080.000	Average	28.1	28.4	8.1	36.2	36.5	54	17.8	17.5
8	3216.000	Peak	42.0	40.8	10.6	52.6	51.4	74	21.4	22.6
9	3216.000	Average	28.2	27.2	10.6	38.8	37.8	54	15.2	16.2
10	4924.000	Peak	42.6	42.7	14.5	57.1	57.2	74	16.9	16.8
11	4924.000	Average	29.6	29.6	14.5	44.1	44.1	54	10.0	9.9
12	7386.000	Peak	41.2	41.3	20.2	61.4	61.5	74	12.6	12.5
13	7386.000	Average	29.3	29.5	20.2	49.5	49.7	54	4.5	4.3

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]		Margin [dB]	
			Hor	Ver		Hor	Ver	Hor	Ver	Hor	Ver
1*	2462.000	Peak	93.1	88.6	7.5	100.6	96.1	-	-	-	-
2*	2390.000	Peak	37.1	36.3	7.4	44.5	43.7	80.6	76.1	36.1	32.4
3*	2400.000	Peak	39.2	38.0	7.4	46.6	45.4	80.6	76.1	34.0	30.8
4*	2483.500	Peak	52.9	49.2	7.6	60.5	56.8	80.6	76.1	20.1	19.4

Note.
* : Band Edge of Restrict Band
- : Measurement limit
The limit value is -20dBc from the detected the carrier power.

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

Operating mode	WLAN 802.11n, 2412 MHz, EUT axis: X			
Location	Matsuda Laboratory No.2 Test Site	Matsuda Laboratory No.1 Test Site		
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz	
Test date	May 29, 2018	June 7, 2018	May 16, 2018	
Temperature	26.0	25.5	23.5	[degree C]
Humidity variation	62	49	52	[%]
Test Engineer	Naohei Murakami			

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hor	Ver		Hor	Ver		Hor	Ver
1	50.800	QuasiPeak	23.4	28.8	-6.3	17.1	22.5	40	22.9	17.5
2	1458.000	Peak	40.8	40.9	3.3	44.1	44.2	74	29.9	29.8
3	1458.000	Average	29.1	28.3	3.3	32.4	31.6	54	21.6	22.4
4	1608.000	Peak	41.1	41.8	4.4	45.5	46.2	74	28.5	27.8
5	1608.000	Average	27.2	28.2	4.4	31.6	32.6	54	22.4	21.4
6	2080.000	Peak	39.9	40.1	8.1	48.0	48.2	74	26.0	25.8
7	2080.000	Average	27.6	28.2	8.1	35.7	36.3	54	18.3	17.7
8	3216.000	Peak	41.3	40.3	10.6	51.9	50.9	74	22.1	23.1
9	3216.000	Average	27.9	27.6	10.6	38.5	38.2	54	15.5	15.8
10	4824.000	Peak	42.2	41.6	14.3	56.5	55.9	74	17.5	18.1
11	4824.000	Average	29.9	29.2	14.3	44.2	43.5	54	9.8	10.5
12	7236.000	Peak	42.5	41.4	19.9	62.4	61.3	74	11.7	12.8
13	7236.000	Average	29.2	28.8	19.9	49.1	48.7	54	4.9	5.3

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]		Margin [dB]	
			Hor	Ver		Hor	Ver	Hor	Ver	Hor	Ver
1*	2412.000	Peak	90.1	85.3	7.4	97.5	92.7	-	-	-	-
2*	2390.000	Peak	53.7	45.0	7.4	61.1	52.4	77.5	72.7	16.4	20.3
3*	2400.000	Peak	66.4	63.7	7.4	73.8	71.1	77.5	72.7	3.6	1.6
4*	2483.500	Peak	37.7	37.0	7.6	45.3	44.6	77.5	72.7	32.2	28.1

Note.
* : Band Edge of Restrict Band
- : Measurement limit
The limit value is -20dBc from the detected the carrier power.

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

Operating mode	WLAN 802.11n, 2437 MHz, EUT axis: X			
Location	Matsuda Laboratory No.2 Test Site	Matsuda Laboratory No.1 Test Site		
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz	
Test date	May 29, 2018	June 7, 2018	May 16, 2018	
Temperature	26.0	25.5	23.5	[degree C]
Humidity variation	62	49	52	[%]
Test Engineer	Naohei Murakami			

No.	**Freq. [MHz]**	**Detector**	**Reading [dBuV]**		**Factor [dB]**	**Result [dBuV/m]**		**Limit [dBuV/m]**	**Margin [dB]**	
			Hor	**Ver**		**Hor**	**Ver**		**Hor**	**Ver**
1	50.800	QuasiPeak	23.8	28.9	-6.3	17.5	22.6	40	22.5	17.4
2	1458.000	Peak	40.4	40.9	3.3	43.7	44.2	74	30.4	29.8
3	1458.000	Average	28.4	28.6	3.3	31.7	31.9	54	22.3	22.1
4	1608.000	Peak	41.3	42.3	4.4	45.7	46.7	74	28.3	27.3
5	1608.000	Average	28.0	27.5	4.4	32.4	31.9	54	21.6	22.1
6	2080.000	Peak	40.3	40.4	8.1	48.4	48.5	74	25.6	25.5
7	2080.000	Average	27.8	28.1	8.1	35.9	36.2	54	18.1	17.8
8	3216.000	Peak	40.6	41.1	10.6	51.2	51.7	74	22.8	22.3
9	3216.000	Average	28.2	28.3	10.6	38.8	38.9	54	15.2	15.1
10	4874.000	Peak	43.1	42.7	14.5	57.6	57.2	74	16.4	16.8
11	4874.000	Average	29.4	29.7	14.5	43.9	44.2	54	10.1	9.8
12	7311.000	Peak	41.5	40.9	20.0	61.5	60.9	74	12.5	13.1
13	7311.000	Average	29.0	28.2	20.0	49.0	48.2	54	5.0	5.8

Note.

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

Operating mode	WLAN 802.11n, 2462 MHz, EUT axis: X			
Location	Matsuda Laboratory No.2 Test Site	Matsuda Laboratory No.1 Test Site		
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz	
Test date	May 29, 2018	June 7, 2018	May 16, 2018	
Temperature	26.0	25.5	23.5	[degree C]
Humidity variation	62	49	52	[%]
Test Engineer	Naohei Murakami			

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hor	Ver		Hor	Ver		Hor	Ver
1	50.800	QuasiPeak	22.7	28.6	-6.3	16.4	22.3	40	23.6	17.7
2	1458.000	Peak	41.4	40.4	3.3	44.7	43.7	74	29.3	30.4
3	1458.000	Average	27.8	28.6	3.3	31.1	31.9	54	22.9	22.1
4	1608.000	Peak	39.7	41.8	4.4	44.1	46.2	74	29.9	27.8
5	1608.000	Average	28.2	28.1	4.4	32.6	32.5	54	21.4	21.5
6	2080.000	Peak	40.8	40.9	8.1	48.9	49.0	74	25.1	25.0
7	2080.000	Average	27.2	27.0	8.1	35.3	35.1	54	18.7	18.9
8	3216.000	Peak	41.2	41.5	10.6	51.8	52.1	74	22.2	21.9
9	3216.000	Average	28.3	28.4	10.6	38.9	39.0	54	15.1	15.0
10	4924.000	Peak	43.3	41.6	14.5	57.8	56.1	74	16.2	18.0
11	4924.000	Average	29.1	28.4	14.5	43.6	42.9	54	10.4	11.1
12	7386.000	Peak	40.8	40.9	20.2	61.0	61.1	74	13.0	12.9
13	7386.000	Average	28.8	29.4	20.2	49.0	49.6	54	5.0	4.4

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]		Margin [dB]	
			Hor	Ver		Hor	Ver	Hor	Ver	Hor	Ver
1*	2462.000	Peak	92.7	88.4	7.5	100.2	95.9	-	-	-	-
2*	2390.000	Peak	38.0	37.8	7.4	45.4	45.2	80.2	75.9	34.8	30.7
3*	2400.000	Peak	36.7	38.0	7.4	44.1	45.4	80.2	75.9	36.1	30.5
4*	2483.500	Peak	52.4	49.3	7.6	60.0	56.9	80.2	75.9	20.2	19.0

Note.
* : Band Edge of Restrict Band
- : Measurement limit
The limit value is -20dBc from the detected the carrier power.

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

9.2 Receiver Spurious Emissions

Regulations	RSS-Gen 7.1
Test Method/Guide	ANSI C63.10-2013 clause 6.5 and 6.6

Test Procedure

See section 9.1

Test Result

Operating mode	WLAN Receiving mode, 2412 MHz, EUT axis: X			
Location	Matsuda Laboratory No.2 Test Site	Matsuda Laboratory No.1 Test Site		
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz	
Test date	May 29, 2018	June 8, 2018	May 16, 2018	
Temperature	26.0	24.5	23.5	[degree C]
Humidity variation	62	48	52	[%]
Test Engineer	Naohei Murakami			

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hor	Ver		Hor	Ver		Hor	Ver
1	50.800	QuasiPeak	23.2	28.4	-6.3	16.9	22.1	40	23.1	17.9
2	1458.000	Peak	41.9	41.2	3.3	45.2	44.5	74	28.8	29.5
3	1458.000	Average	27.7	28.7	3.3	31.0	32.0	54	23.0	22.0
4	1608.000	Peak	40.7	39.9	4.4	45.1	44.3	74	28.9	29.7
5	1608.000	Average	28.5	27.8	4.4	32.9	32.2	54	21.1	21.8
6	2080.000	Peak	41.7	40.9	8.1	49.8	49.0	74	24.2	25.0
7	2080.000	Average	28.6	27.6	8.1	36.7	35.7	54	17.3	18.3
8	3216.000	Peak	41.0	41.3	10.6	51.6	51.9	74	22.4	22.1
9	3216.000	Average	28.5	27.4	10.6	39.1	38.0	54	14.9	16.0
10	4824.000	Peak	43.2	43.4	14.5	57.7	57.9	74	16.3	16.1
11	4824.000	Average	29.5	30.0	14.5	44.0	44.5	54	10.0	9.5
12	7236.000	Peak	41.9	41.9	20.0	61.9	61.9	74	12.1	12.1
13	7236.000	Average	28.3	28.5	20.0	48.3	48.5	54	5.8	5.5

Note.

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

Operating mode	WLAN Receiving mode, 2437 MHz, EUT axis: X			
Location	Matsuda Laboratory No.2 Test Site	Matsuda Laboratory No.1 Test Site		
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz	
Test date	May 29, 2018	June 8, 2018	May 16, 2018	
Temperature	26.0	24.5	23.5	[degree C]
Humidity variation	62	48	52	[%]
Test Engineer	Naohei Murakami			

No.	**Freq. [MHz]**	**Detector**	**Reading [dBuV]**		**Factor [dB]**	**Result [dBuV/m]**		**Limit [dBuV/m]**	**Margin [dB]**	
			Hor	**Ver**		**Hor**	**Ver**		**Hor**	**Ver**
1	50.800	QuasiPeak	23.5	28.5	-6.3	17.2	22.2	40	22.8	17.8
2	1458.000	Peak	42.2	42.0	3.3	45.5	45.3	74	28.5	28.8
3	1458.000	Average	28.9	28.1	3.3	32.2	31.4	54	21.8	22.6
4	1608.000	Peak	40.1	41.2	4.4	44.5	45.6	74	29.5	28.4
5	1608.000	Average	27.5	28.1	4.4	31.9	32.5	54	22.1	21.5
6	2080.000	Peak	40.9	41.1	8.1	49.0	49.2	74	25.0	24.8
7	2080.000	Average	28.1	27.8	8.1	36.2	35.9	54	17.8	18.1
8	3216.000	Peak	41.3	42.2	10.6	51.9	52.8	74	22.1	21.2
9	3216.000	Average	28.4	28.9	10.6	39.0	39.5	54	15.1	14.5
10	4874.000	Peak	42.8	41.7	14.5	57.3	56.2	74	16.7	17.8
11	4874.000	Average	29.0	29.8	14.5	43.5	44.3	54	10.5	9.7
12	7311.000	Peak	41.3	41.3	20.0	61.3	61.3	74	12.7	12.8
13	7311.000	Average	29.5	29.5	20.0	49.5	49.5	54	4.5	4.5

Note.

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

Operating mode	WLAN Receiving mode, 2462 MHz, EUT axis: X			
Location	Matsuda Laboratory No.2 Test Site	Matsuda Laboratory No.1 Test Site		
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz	
Test date	May 29, 2018	June 8, 2018	May 16, 2018	
Temperature	26.0	24.5	23.5	[degree C]
Humidity variation	62	48	52	[%]
Test Engineer	Naohei Murakami			

No.	**Freq. [MHz]**	**Detector**	**Reading [dBuV]**		**Factor [dB]**	**Result [dBuV/m]**		**Limit [dBuV/m]**	**Margin [dB]**	
			Hor	**Ver**		**Hor**	**Ver**		**Hor**	**Ver**
1	50.800	QuasiPeak	23.6	27.9	-6.3	17.3	21.6	40	22.7	18.4
2	1458.000	Peak	41.7	42.2	3.3	45.0	45.5	74	29.0	28.5
3	1458.000	Average	28.2	28.8	3.3	31.5	32.1	54	22.5	21.9
4	1608.000	Peak	40.4	41.4	4.4	44.8	45.8	74	29.2	28.2
5	1608.000	Average	28.2	27.7	4.4	32.6	32.1	54	21.5	21.9
6	2080.000	Peak	40.0	40.7	8.1	48.1	48.8	74	25.9	25.3
7	2080.000	Average	28.6	27.0	8.1	36.7	35.1	54	17.3	18.9
8	3216.000	Peak	42.3	40.7	10.6	52.9	51.3	74	21.1	22.7
9	3216.000	Average	27.6	29.1	10.6	38.2	39.7	54	15.8	14.3
10	4924.000	Peak	43.1	43.2	14.5	57.6	57.7	74	16.4	16.3
11	4924.000	Average	29.6	29.3	14.5	44.1	43.8	54	9.9	10.2
12	7386.000	Peak	41.1	41.6	20.2	61.3	61.8	74	12.7	12.2
13	7386.000	Average	29.5	28.4	20.2	49.7	48.6	54	4.3	5.4

Note.

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

SECTION 10. LIST AND DIAGRUM OF MEASURING INSTRUMENTS

Test instruments are calibrated according to Quality Manual and Calibration Rules of Intertek Japan K.K.

All measurements equipment used for the measurement is calibrated based on standard.
Each measurement result is traceable to national or international standards.
Antenna used in the measurement is calibrated according to ANSI C63.5:2006.

10.1 Radiated Emission

Instrument	Model No.	Serial No.	Manufacturer	Cal. Interval	Effective period
30 – 1000 MHz					
Test Receiver	ESR26 (Firmware: 3.36 SP2)	101629	Rohde & Schwarz	1 Y	Feb. 2019
Broad Band Antenna	VULB9168	124	Schwarzbeck	1 Y	Aug. 2018
Amplifier	8447D	2727A05809	Hewlett Packard	1 Y	Jan. 2019
Step Attenuator	8494B	2805A14576	Hewlett Packard	1 Y	Jan. 2019
6dB Attenuator	MP721B	M87938	ANRITSU	1 Y	Jan. 2019
Coaxial Cable (R1)	RG214HF(8.0m)	MTS02R3-1	SUHNER	1 Y	Jan. 2019
Coaxial Cable (R2)	12D-SFA(28.0m)	MTS02R3-2	Intertek	1 Y	Jan. 2019
Coaxial Cable (R3)	RG214HF(2.0m)	MTS02R3-3	SUHNER	1 Y	Jan. 2019
Coaxial Cable (R4)	RG214HF(0.4m)	MTS02R3-4	SUHNER	1 Y	Jan. 2019
Coaxial Cable (R5)	RG214HF(0.4m)	MTS02R3-5	SUHNER	1 Y	Jan. 2019
Coaxial Cable (R6)	RG214HF(1.5m)	MTS02R3-6	SUHNER	1 Y	Jan. 2019
Coaxial Cable (R7)	RG214HF(1.5m)	MTS02R3-7	SUHNER	1 Y	Jan. 2019
Coaxial Cable (R8)	RG214HF(1.5m)	MTS02R3-8	SUHNER	1 Y	Jan. 2019
Coaxial Cable (R9)	5D-2W(8.0m)	MTS02R3-9	SUHNER	1 Y	Jan. 2019
Site Attenuation	-	-	-	1 Y	Apr. 2019
Above 1000 MHz					
Spectrum Analyzer	ESR26 (Firmware: 3.36 SP2)	101629	Rohde & Schwarz	1 Y	Feb. 2019
Double Ridged Antenna	3115	2568	EMCO	1 Y	Jan. 2019
Amplifier	TPA0118-30	950186	TOYO Corporation	1 Y	Apr. 2019
3dB Attenuator	6803.17.B	E00AT3GA	SUNNER	1 Y	Apr. 2019
Notch Filter	BRM50702	111	Micro-Ttronics	1 Y	Apr. 2019
Coaxial Cable (R11)	SUCOFLEX 104(6.0m)	65566/4PE	SUNNER	1 Y	Apr. 2019
Coaxial Cable (R12)	SUCOFLEX 104(1.0m)	64587/4PE	SUNNER	1 Y	Apr. 2019
Horn Antenna with Preamplifier	MLA-18265-B03-30	1694440	TSJ	1 Y	Mar. 2019
Coaxial cable	5B-048-98-98-6000	120315	Candox	1 Y	May 2019
SVSWR(1 – 18GHz)	-	-	-	1 Y	Sep. 2018
Common					
RF Switch(1)	MP59B	M28942	ANRITSU	1 Y	Jan. 2019
RF Switch(2)	ACX-150-1	E02301501	Intertek	1 Y	Jan. 2019
Testing Software	emiT (3,0,0,0)			N/A	N/A

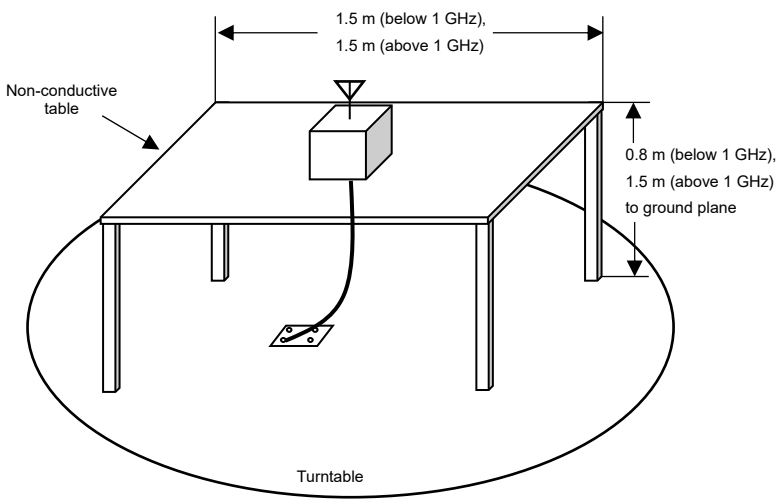
ANNEX

7

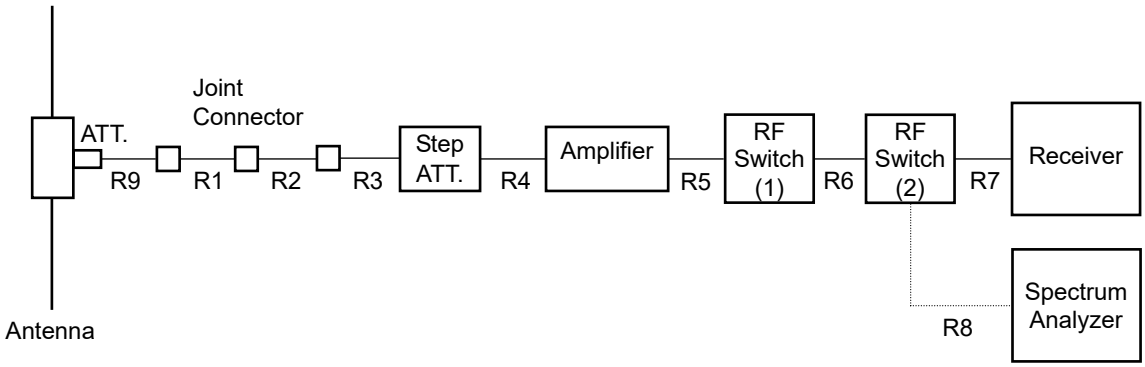
Measurement Instruments Configurations

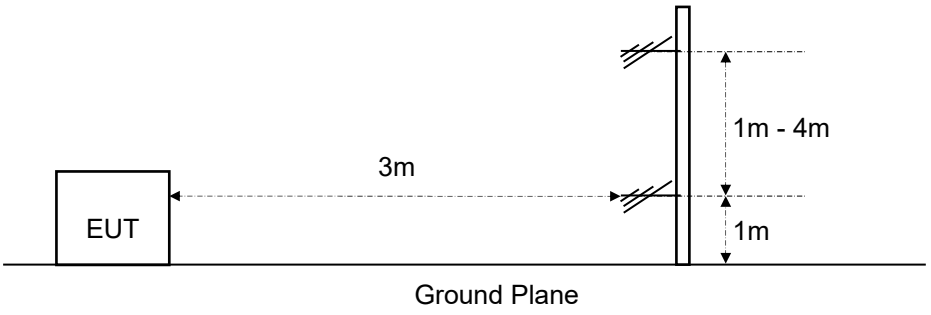
Radiated disturbance

Test setup as per standard



30-1000MHz





Above 1GHz

Diagram of the measurement instruments (1 - 18 GHz)

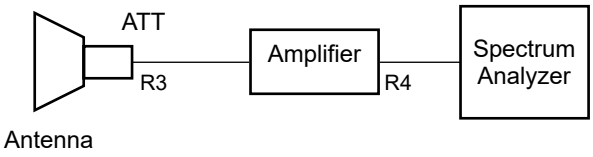


Diagram of the measurement instruments (1000- 2000 and 3000 – 18000 MHz)

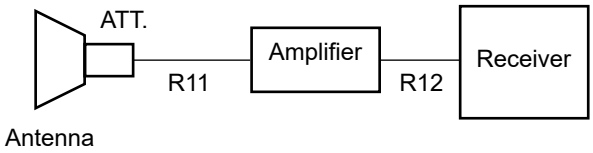
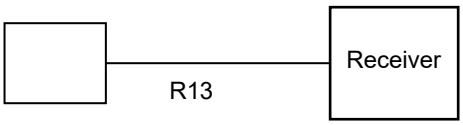
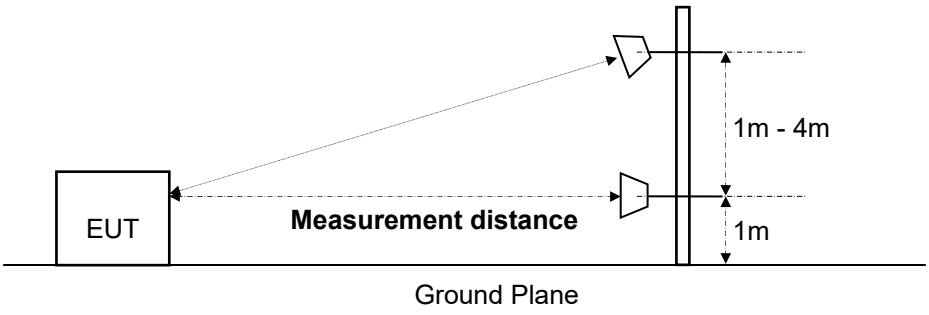


Diagram of the measurement instruments (Above 18 GHz)



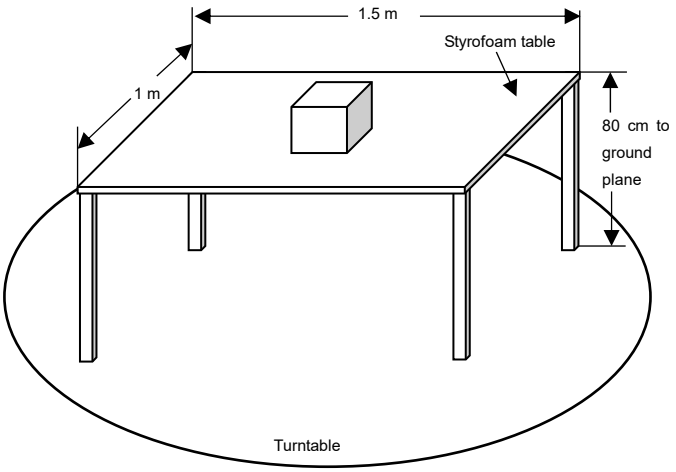


[Preliminary Measurement]
EUT is tested on all operating conditions.
The spectrum analyzer is set max-hold mode and swept during turntable was rotated 0 to 360 degree,
And find the worst emission conditions in configuration, operating mode, or ambient noise notation.

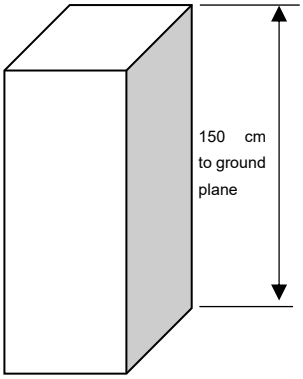
[Final Measurement]
The EUT operated in the worst emission condition found by the preliminary test.
The turntable azimuth (EUT direction) and antenna height are adjusted the position so that maximum field strength is obtained for each frequency spectrum to be measured.
The equipment and cables are arranged or manipulated within the range of the test standard in the above condition. At least six highest spectrums are measured by the test receiver (quasi-peak) and spectrum analyzer (peak and average). When the uncertain result was obtained (30 – 1000 MHz), the measurement is retried by using the half wave dipole antenna instead of the broadband antenna.

EUT set-up as per standard
Radiated disturbance

From 30 MHz to 1000 MHz



Above 1 GHz



Absorber placement and Receive Antenna location in Radiated disturbance above 1 GHz