Report on the RF Testing of:

KYOCERA Corporation Mobile Phone, Model: EB1155 FCC ID: JOYEB1155

In accordance with FCC Part 15 Subpart C

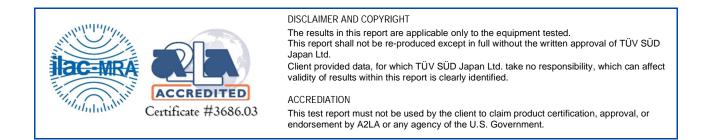
Prepared for: KYOCERA Corporation Yokohama Office 2-1-1 Kagahara, Tsuzuki-ku Yokohama-shi, Kanagawa, Japan Phone: +81-45-943-6253 Fax: +81-45-943-6314

COMMERCIAL-IN-CONFIDENCE

Document Number: JPD-TR-22219-1

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Hiroaki Suzuki	Deputy Manager of RF Group	Approved Signatory	2023.01.06			
Signatures in this approval box have	Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Japan Ltd. document control rules.					

EXECUTIVE SUMMARY – Result: Complied A sample of this product was tested and the result above was confirmed in accordance with FCC Part 15 Subpart C.



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1 Summary of Test

1.1 Modification history of the test report

Document Number	Modification History	Issue Date
JPD-TR-22219-0	First Issue	20-December-2022
JPD-TR-22219-1	Conducted test results for EB1146 added.	Refer to the cover page

1.2 Standards

CFR47 FCC Part 15 Subpart C

1.3 Test methods

ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02

1.4 Deviation from standards

None

1.5 List of applied test(s) of the EUT

Test item section	Test item	Condition	Result	Remark
15.247(a)(2)	6dB Bandwidth	Conducted	PASS	*1
15.247(b)(3)	Maximum Peak Output Power	Conducted	PASS	*1
15.247(d)	Band Edge Compliance of RF Conducted Emissions	Conducted	PASS	*1
15.247(d)		Conducted	PASS	*1
15.205 15.209	Spurious Emissions	Radiated	PASS	-
15.247(d) 15.205 15.209	Restricted Bands of Operation	Radiated	PASS	-
15.247(e)	Transmitter Power Spectral Density	Conducted	PASS	*1
15.207	AC Power Line Conducted Emissions	Conducted	PASS	-

*1 Since there is no change in Module from FCC ID: JOYEB1146, only the Radiated test items were performed. Conduction test results are listed as "JPD-TR-22191-0" of "FCC ID: JOYEB1146".

1.6 Test information

None

1.7 Test set up

Table-top



1.8 Test period

28-October-2022 - 9-December-2022



2 Equipment Under Test

All information in this chapter was provided by the applicant.

2.1 EUT information

Applicant	KYOCERA Corporation
	Yokohama Office 2-1-1 Kagahara, Tsuzuki-ku Yokohama-shi, Kanagawa, Japan
	Phone: +81-45-943-6253 Fax: +81-45-943-6314
Equipment Under Test (EUT)	Mobile Phone
Model number	EB1155
Serial number	352034010006537, 352034010006552
Trade name	Kyocera
Number of sample(s)	2
EUT condition	Pre-Production
Power rating	Battery: DC 3.87 V
Size	(W) 70 mm × (D) 161 mm × (H) 8.9 mm
Environment	Indoor and Outdoor use
Terminal limitation	-20 °C to 60 °C
Hardware version	DMT
Software version	0.100ML.9013.a
Firmware version	Not applicable
RF Specification	
Protocol	Bluetooth 5.3 + EDR
Frequency range	2402 MHz-2480 MHz
Number of RF Channels	40 Channels
Modulation method/Data rate	GFSK (1Mbps, 2Mbps), Long Range S2/S8 (500kbps/125kbps)
Channel separation	2 MHz
Conducted power	3.673 mW
Antenna type	Internal antenna
Antenna gain	-0.5 dBi

2.2 Modification to the EUT

The table below details modifications made to the EUT during the test project.

Modification State	Description of Modification	Modification fitted by	Date of Modification	
Model: EB1155, Serial Number: 352034010006537, 352034010006552				



Japan

Modification State	Description of Modification	Modification fitted by	Date of Modification
0	As supplied by the applicant	Not Applicable	Not Applicable

2.3 Variation of family model(s)

2.3.1 List of family model(s)

Not applicable

2.3.2 Reason for selection of EUT

Not applicable

2.4 Operating channels and frequencies

Channel	Frequency [MHz]	Channel	Frequency [MHz]
0	2402	20	2442
1	2404	21	2444
2	2406	22	2446
3	2408	23	2448
4	2410	24	2450
5	2412	25	2452
6	2414	26	2454
7	2416	27	2456
8	2418	28	2458
9	2420	29	2460
10	2422	30	2462
11	2424	31	2464
12	2426	32	2466
13	2428	33	2468
14	2430	34	2470
15	2432	35	2472
16	2434	36	2474
17	2436	37	2476
18	2438	38	2478
19	2440	39	2480

2.5 Operating mode

The EUT had been tested under operating condition. There are three channels have been tested as following:

Tested Channel	Frequency [MHz]
Low	2402
Middle	2440
High	2480

The pre-test has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates.

Tested Channel	Modulation Type	Data Rate
Low, Middle, High	GFSK	1 Mbps

The field strength of spurious emissions was measured at each position of all three axis X, Y and Z to compare the level, and the maximum noise.



The worst emission was found in Z-axis and the worst case recorded.

Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports.

2.6 Operating flow

[Tx mode]

- i) Test program setup to the Software
- ii) Select a Test mode
- Operating frequency: Channel Low: 2402 MHz, Channel Middle: 2440 MHz, Channel High: 2480 MHz
- iii) Start test mode

[Rx mode]

- i) Test program setup to the Software
- ii) Select a Test mode
 - Operating frequency: Channel Low: 2402 MHz, Channel Middle: 2440 MHz, Channel High: 2480 MHz
- iii) Start test mode



3 Configuration of Equipment

Numbers assigned to equipment on the diagram in "3.3 System configuration" correspond to the list in "3.1 Equipment used" and "3.2 Cable(s) used".

This test configuration is based on the manufacture's instruction.

Cabling and setup(s) were taken into consideration and test data was taken under worse case condition.

3.1 Equipment used

No.	Equipment	Company	Model No.	Serial No.	FCC ID/DoC	Comment
1	Mobile Phone	KYOCERA	EB1155	352034010006537 352034010006552	JOYEB1155	EUT
2	AC Adapter	KDDI	0602PQA	N/A	N/A	*

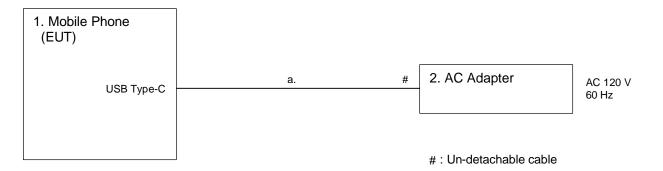
*:AC power line Conducted Emission Test.

3.2 Cable(s) used

No.	Equipment	Length[m]	Shield	Connector	Comment		
а	USB cable (for AC Adapter)	1.5	No	Plastic	*		
* * * •	* A O manual that O and that that East and East and the that the the the the the the the the the th						

*: AC power line Conducted Emission Test.

3.3 System configuration





4 Test Result

4.1 6dB Bandwidth / Occupied Bandwidth (99%)

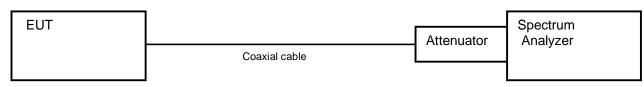
4.1.1 Measurement procedure

[FCC 15.247(a)(2), KDB558074 D01 v05r02]

The bandwidth at 6 dB down from the highest inband spectral density is measured with spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;

- a) RBW = 100 kHz
- b) VBW \geq 3 x RBW
- c) Sweep time = auto-couple
- d) Detector = peak
- e) Trace mode = max hold
 - Test configuration



4.1.2 Limit

The minimum permissible 6dB bandwidth is 500kHz.

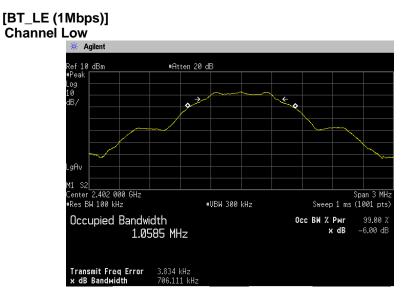
4.1.3 Measurement result

: 18-October-2022		
: 21.4 [°C]		
: 47.0 [%]	Test engineer	:
: Shielded room No.4	-	Kazunori Saito
	: 21.4 [°C] : 47.0 [%]	: 21.4 [°C] : 47.0 [%] Test engineer

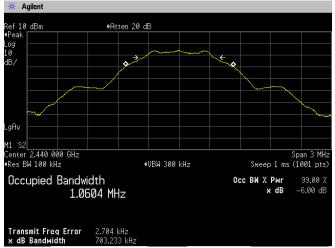
	6dB bandwidth [MHz]									
Channel	BT_LE									
-	1Mbps	2Mbps	LongRange S2	LongRange S8						
Low	0.706	1.176	0.669	0.672						
Middle	0.703	1.181	0.670	0.672						
High	0.703	1.181	0.671	0.671						

*: Tested by EB1146

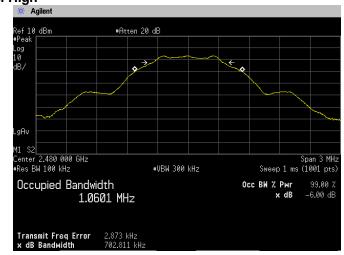
4.1.4 Trace data



Channel Middle

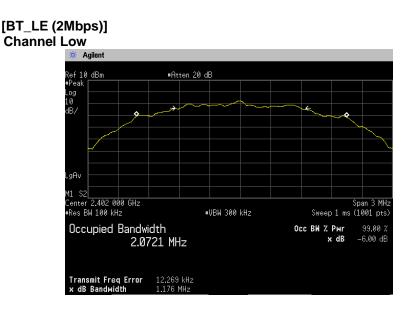




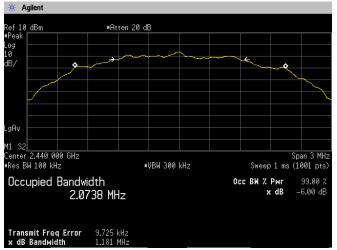








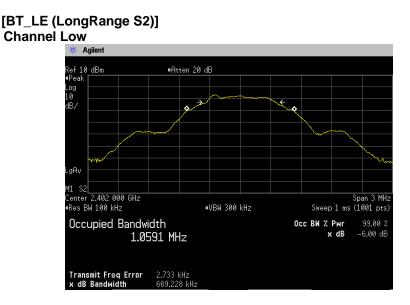
Channel Middle



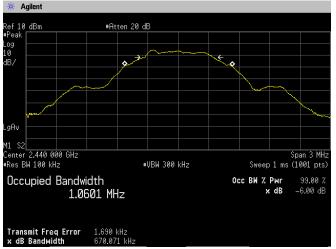








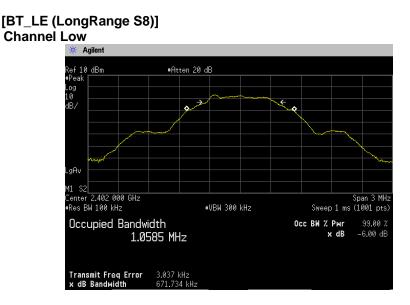
Channel Middle



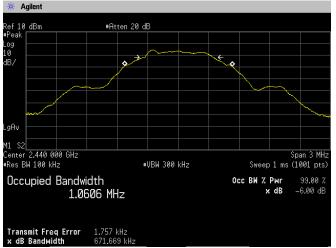




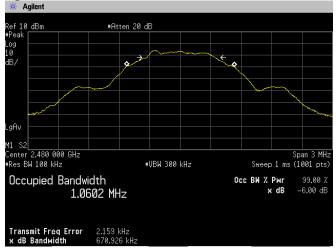




Channel Middle









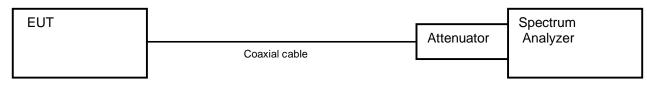
4.2 Maximum Peak Output Power

4.2.1 Measurement procedure

[FCC 15.247(b)(3), KDB558074 D01 v05r02]

The peak power is measured with a power sensor connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

- Test configuration



4.2.2 Limit

1 W (1000 mW) or less



4.2.3 Measurement result

Date	: 18-October-2022		
Temperature	: 21.4 [°C]		
Humidity	: 47.0 [%]	Test engineer	:
Test place	: Shielded room No.4	_	Kazunori Saito

Battery Full (1Mbps)

Channel	Center Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Peak Output Power (mW)	Limit (mW)	Result
Low	2402	-6.49	10.93	4.44	2.780	≦1000	PASS
Middle	2440	-5.29	10.93	5.64	3.664	≦1000	PASS
High	2480	-5.70	10.93	5.23	3.334	≦1000	PASS

*: Tested by EB1146

Battery Full (2Mbps)

Channel	Center Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Peak Output Power (mW)	Limit (mW)	Result
Low	2402	-6.46	10.93	4.47	2.799	≦1000	PASS
Middle	2440	-5.28	10.93	5.65	3.673	≦1000	PASS
High	2480	-5.70	10.93	5.23	3.334	≦1000	PASS

*: Tested by EB1146

Battery Full (LongRange S2)

Channel	Center Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Peak Output Power (mW)	Limit (mW)	Result
Low	2402	-6.47	10.93	4.46	2.793	≦1000	PASS
Middle	2440	-5.30	10.93	5.63	3.656	≦1000	PASS
High	2480	-5.72	10.93	5.21	3.319	≦1000	PASS

*: Tested by EB1146

Battery Full (LongRange S8)

Channel	Center Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Peak Output Power (mW)	Limit (mW)	Result
Low	2402	-6.47	10.93	4.46	2.793	≦1000	PASS
Middle	2440	-5.30	10.93	5.63	3.656	≦1000	PASS
High	2480	-5.72	10.93	5.21	3.319	≦1000	PASS

*: Tested by EB1146

Calculation;

Reading (dBm) + Factor (dB) = Level (dBm) $10\log P = Level (dBm)$ $P = 10^{(Maximum Peak Output Power / 10)} (mW)$



4.3 Band Edge Compliance of RF Conducted Emissions

4.3.1 Measurement procedure

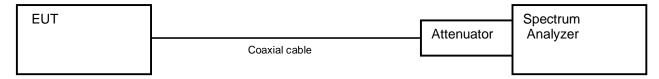
[FCC 15.247(d), KDB558074 D01 v05r02]

The Band Edge is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;

- a) Span = Arbitrary setting. (Setting suitable for measurement.)
- b) RBW = 100 kHz
- c) VBW ≥ 3 x RBW
- d) Sweep time = auto-couple
- e) Detector = peak
- f) Trace mode = max hold

- Test configuration



4.3.2 Limit

In any 100kHz bandwidth outside the frequency band the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.



4.3.3 **Measurement result**

Date	:	7-October-2022			
Temperature	:	23.2 [°C]			
Humidity	:	39.3 [%]	Test engineer	:	
Test place	:	Shielded room No.4	_		Taiki Watan

nabe

[BT_LE (1Mbps)]

Channel	Frequency (MHz)	RF Power Level (dBm)	Band- edge Frequency (MHz)	Band- edge Level (dBm)	Difference Level (dBm)	Limit (dBm)	Result
Low	2402	-7.21	2399.84	-64.81	57.60	At least 20dB below from peak of RF	PASS
High	2480	-6.40	2488.46	-67.70	61.30	At least 20dB below from peak of RF	PASS

*: Tested by EB1146

[BT_LE (2Mbps)]

Channel	Frequency (MHz)	RF Power Level (dBm)	Band- edge Frequency (MHz)	Band- edge Level (dBm)	Difference Level (dBm)	Limit (dBm)	Result
Low	2402	-7.41	2399.92	-40.08	32.67	At least 20dB below from peak of RF	PASS
High	2480	-6.69	2483.58	-65.35	58.66	At least 20dB below from peak of RF	PASS

*: Tested by EB1146

[BT_LE (LongRange S2)]

Channel	Frequency (MHz)	RF Power Level (dBm)	Band- edge Frequency (MHz)	Band- edge Level (dBm)	Difference Level (dBm)	Limit (dBm)	Result
Low	2402	-6.78	2399.84	-65.66	58.88	At least 20dB below from peak of RF	PASS
High	2480	-6.33	2484.14	-69.02	62.69	At least 20dB below from peak of RF	PASS

*: Tested by EB1146

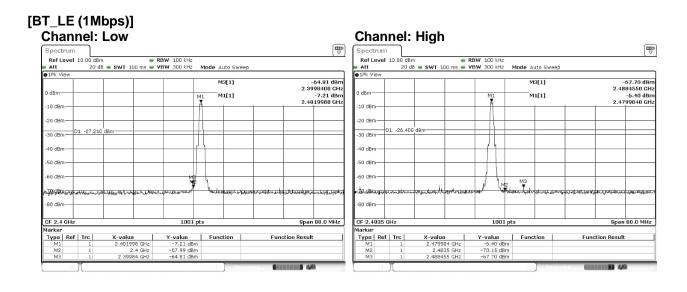
[BT_LE (LongRange S8)]

Channel	Frequency (MHz)	RF Power Level (dBm)	Band- edge Frequency (MHz)	Band- edge Level (dBm)	Difference Level (dBm)	Limit (dBm)	Result
Low	2402	-10.03	2399.76	-67.33	57.30	At least 20dB below from peak of RF	PASS
High	2480	-9.19	2503.48	-69.14	59.95	At least 20dB below from peak of RF	PASS

*: Tested by EB1146



4.3.4 **Trace data**



[BT_LE (2Mbps)]

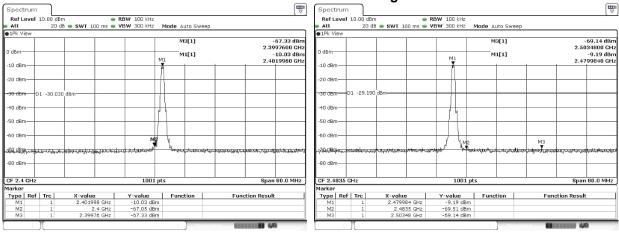
Channel: Low			Channel:	High			
Spectrum			Spectrum				
Ref Level 10.00 dBm 👄 R	RBW 100 kHz		Ref Level 10.00 dB	im 🖷	RBW 100 kHz		
Att 20 dB = SWT 100 ms = V	VBW 300 kHz Mode Auto Sweep		Att 20 (dB . SWT 100 ms .	VBW 300 kHz	Mode Auto Swee	p
1Pk View			e 1Pk View				
	M3[1]	-40.08 dBm 2.3999200 GHz				M3[1]	-65.35 dBn 2.4835800 CH
0 dBm	M1 M1[1]	-7.41 dBm 2.4019980 GHz	0 dBm		M1	M1[1]	-6.69 dBn 2.4799840 GH
-10 dBm-		2.4019980 GHZ	-10 dBm				2.4799040 GR
-20 dBm			-20 dBm				
-30 dBm D1 -27.410 dBm			-30 dBm D1 -26.69	10 dBm			
-40 dBm			-40 dBm		NA		
-50 dBm-			-50 dBm				
-60 dBm			-60 dBm				
ut28.dBM.annanonononononononononononon	manual manual	and and an and a state of the s	NTQUERRY COMPANYCOMMENT	and a presentation of the second	unt to	antique al monthly	and the state of the
-80 dBm			-80 dBm		_		
CF 2.4 GHz	1001 pts	Span 80.0 MHz	CF 2.4835 GHz		1001 pt	s	Span 80.0 MHz
Marker		1	Marker				
Type Ref Trc X-value M1 1 2.401998 GHz	Y-value Function	Function Result	Type Ref Trc	X-value 2.479984 GHz	Y-value -6.69 dBm	Function	Function Result
M2 1 2.4 GHz M3 1 2.39992 GHz	-38.04 dBm -40.08 dBm		M2 1 M3 1	2.4835 GHz 2.48358 GHz	-64.56 dBm -65.35 dBm		
	- Menn	(444



[BT_LE (LongRange S2)] Channel: Low **Channel: High** Spectrum RefLevel 10.00 dBm • RBW 100 kHz Att 20 dB • SWT 100 ms • VBW 300 kHz Mode Auto Sweep -65.66 dBm 2.3998400 GHz -6.78 dBm 2.4017580 GHz -69.02 dBm 2.4841390 CHz -6.33 dBm 2.4797440 GHz M3[1] M3[1] dBm dBr M1[1] M1 M1[1] 10 dBm 10 dBn -20 dBm 20 dB D1 -26.780 dBri 01 -26.33 -30 dBm 30 dB(40 dBm t0 dBr -50 dBm 50 dBm -60 dBm 60 dBn 1,43 Ayou 7.9.5月00-7月 Real production and the second adjust lat 14.4 -80 dBm 80 dBm CF 2.4 GH 80.0 MHz 1001 pt Span 80.0 MHz 1001 p CF 2.4835 GH Spa Marker Type Ref Trc M1 1 Type Ref Trc X-value 2.401758 GHz 2.4 GHz 2.39984 GHz Y-value Function Function Result X-value 2.479744 GHz 2.4835 GHz 2.484139 GHz -6.33 dBm Function Result M2 M3 -65.66 dBm -71.01 dBm -69.02 dBm M2 M3

[BT_LE (LongRange S8)] Channel: Low

Channel: High





4.4 Spurious emissions - Conducted -

4.4.1 Measurement procedure

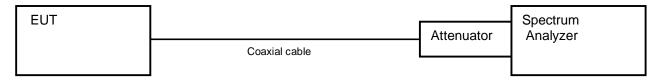
[FCC 15.247(d), KDB558074 D01 v05r02]

The spurious emissions (Conducted) are measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;

- a) Span = wide enough to fully capture the emission being measured.
- b) RBW = 100 kHz
- c)́ VBW ≥ RBW
- d) Sweep time = auto-couple
- e) Detector = peak
- f) Trace mode = max hold

- Test configuration



4.4.2 Limit

In any 100kHz bandwidth outside the frequency band the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

4.4.3 Measurement result

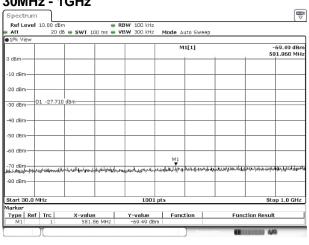
Date	:	7-October-2022			
Temperature	:	23.2 [°C]			
Humidity	:	39.3 [%]	Test engineer	:	
Test place	:	Shielded room No.4			Taiki Watanabe

Frequency [MHz]	Limit [dB]	Results Chart	Result
2402	At least 20dB below from peak of RF	See the trace Data	PASS
2440	At least 20dB below from peak of RF	See the trace Data	PASS
2480	At least 20dB below from peak of RF	See the trace Data	PASS
	[MHz] 2402 2440	[MHz][dB]2402At least 20dB below from peak of RF2440At least 20dB below from peak of RF	[MHz][dB]Results Chart2402At least 20dB below from peak of RFSee the trace Data2440At least 20dB below from peak of RFSee the trace Data

*: Tested by EB1146

4.4.4 Trace data

[BT_LE (1Mbps)] Channel: Low 30MHz - 1GHz



5GHz - 10GHz

Att 20 d 1Pk View	B 🖷 SWT 100 ms 🖷	VBW 300 KH2	Mode Auto Sweep		
			M1[1]		-64.26 dBn 6.83570 GH
0 dBm				1 1	6.83570 GH
-10 dBm		_			
-20 dBm					
-30 dBm D1 -27.71) dBm				
-40 dBm		_			
-50 dBm		_			
-60 dBm	M	1			
under and an and a state of the	and the state of t	Work with moderated and	walayanga kan ^a tradike takang	workeller working when a	www.hillhauser
-80 dBm					
Start 5.0 GHz		1001 p	ts	S	top 10.0 GHz
Marker Type Ref Trc	X-value	Y-value	Function	Function Re:	sult

15GHz - 20GHz

Spectrum		
Ref Level 10.00 dBm	 RBW 100 kHz 	
Att 20 dB . SWT 100 ms	 VBW 300 kHz Mode Auto Sweep 	2
1Pk View		
	M1[1]	-60.13 dBn 19.23830 GH
) dBm		
10 dBm		
20 dBm		
30 dBm D1 -27.710 dBm		
40 dBm		
50 dBm		
50 dBm		M1
50 Clerit Australianski provid The australian in the factorian 70 Clerit	مار	weighter may ston and the held market dury
30 dBm		
tart 15.0 GHz	1001 pts	Stop 20.0 GHz
arker	262	
Type Ref Trc X-value	Y-value Function	Function Result
M1 1 19.2383 GF	z -60.13 dBm	

1GHz - 5GHz

Spectrum							
Ref Level				RBW 100 kHz			
Att	20 d	B 🖷 SWT 10	0 ms 🖷 '	VBW 300 kHz	Mode Auto S	weep	
1Pk View							
					M2[1]		-66.17 dB
0 dBm							4.71030 G
o dom			M1		M1[1]		-7.71 dB 2.40060 GF
-10 dBm						1	2.40000 G
-10 GD11							
-20 dBm							
20 0011							
-30 dBm)1 -27.710	dBm					
-30 dbm							
-40 dBm							
40 0011							
-50 dBm							
-30 dbm							
-60 dBm							
-BU LEIN							M2
70 dDm				11.1		والبدا بيلين وتجاري	بالم المراجع ال
helsenter	elaurapentipenti	reptalings When an	ALLOW ALLANDING	the and the second second	PWPARA Analysian	and and a sector of	When and the second states the plant of the
-80 dBm							
-80 GBIII							
Start 1.0 G	lz			1001 p	ts		Stop 5.0 GH
larker							
Type Ref		X-value		Y-value	Function	F	unction Result
M1	1		i6 GHz	-7.71 dBm			
M2	1	4.710	3 GHz	-66.17 dBm			

10GHz - 15GHz

1Pk View					
			M1[1]		-63.75 dBn 14.56290 GH
0 dBm				1 1	14.30290 GH
-10 dBm		_			
-20 dBm		_			
-30 dBm D1 -27	.710 dBm				
-40 dBm					
-50 dBm		_			
-60 dBm-					M1
-70 dBm	re-fulins-lookethalloriett.eeut	nagenter and the second second	بالمسيران الدخالطاني والمانجين	water and a start and the second	hallander and the second second
-90 dBm		_			
Start 10.0 GHz		1001 pt	s	s	top 15.0 GHz
Marker Type Ref Trc	X-value	Y-value			
M1 1	14.5629 GHz	-63.75 dBm	Function	Function Re:	suit

20GHz - 25GHz

Spectrum Ref Level 1				3W 100 kHz					7
Att 1Pk View	20 dB	- SWT 10	0 ms 🖷 VI	300 kHz	Mode A	ito Sweep			
0 d8m-					м	1[1]			60.99 dB .31220 GF
Jusn									
-10 dBm									
-20 dBm									
-30 dBm D:	-27.710	dBm							
40 dBm									
-50 dBm									
-60 dBm									
70 dBm	hontonian	arten handalorealis	Mith-Martine and flat	programmer and the	barren strainfull	with a share a	qajinintraliql _a n _d ifa	hiter white	hailitikhebern
-80 dBm									
Start 20.0 Gł	łz			1001	pts			Stop	p 25.0 GH
larker Type Ref	Trc	X-value		Y-value	Fund	tion	Fund	tion Resul	t
M1	1	20.312	2 GHz	-60.99 dB	m				



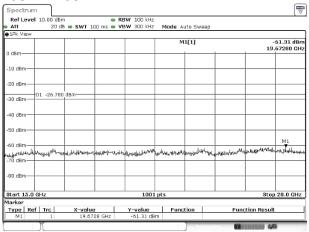
[BT_LE (1Mbps)] Channel: Middle 30MHz - 1GHz

Ref Level 1	0.00 dBm			RBW 100 kHz			U U
Att				VBW 300 kHz	Mode Auto Swe	en	
1Pk View	20 40		00 115	DI COUTIL	HULL AUTO SHE	op	
) dBm					M1[1]	9	-69.18 dBr 966.570 MH
UBIII							
10 dBm							
20 dBm							
0 dBm	-26.780	dBm					
40 dBm							
50 dBm							
50 dBm							
70 dBm							M1
specialization of the Adult of the	kiningahlisk	simple and any	hoghlingsth	whereasternet	Newselland	migrand a strange interspectively	بعلكم بالملتحة والمعالية والمحاجة والمحاجة والمحاجة والمحاجة والمحاجة والمحاجة والمحاجة والمحاجة والمحاجة والمح
90 dBm							
tart 30.0 M	1z			1001 p	ts		Stop 1.0 GHz
arker Type Ref	Tec	x-valu	a	Y-value	Function	Eunct	ion Result
M1	1		57 MHz	-69.18 dBm	runction	Funci	ion nesur

5GHz - 10GHz

1Pk View					-64.04 dBn
			M1[1]		-64.04 dBn 6.95060 GH
0 dBm					-
-10 dBm					
-20 dBm					
30 dBm D1 -26.78	0 dBm				
40 dBm					
50 dBm					
60 dBm	M				
be the first a children with the set	in territory initiation and an encounter	welsternstealthe	hannakerakerakatan.	and the state of the state of the state	huber the holes where
00 dBm					
Start 5.0 GHz		1001 p	ts		Stop 10.0 GHz
larker Type Ref Trc	X-value	Y-value	Function	Function Re	cult
M1 1	6.8506 GHz	-64.04 dBm	runction	Function Re	Suit

15GHz - 20GHz



1GHz - 5GHz

Att .Pk Vier) dB 🖷 SWT 10	Ju ms 🖷	YOW 300 KH2	MODE A	uto Swee)		
PK YID					M	2[1]			66.73 dB
dBm								4	89810 G
10111			M1		M	1[1]		2	-6.78 dB
0 dBm-	_		<u> </u>			-		2.	11000 GI
0 dBm-									
o dom									
0 dBm-	D1 -26.	780 dBm							
0 dBm-	_								
0 dBm-							_		
0 dBm-							_		M
0 -0						a constant da l	Herebelly, 194	Line August	
A prove	aliperaturate	orgiteliter, arrandoriter	Per President	Inferensia and	Alixening to	Too du m	T		
0 dBm-	_						_		
art 1.(1 GHz			1001	nts			Sto	p 5.0 GH
rker	, and			1001					p ole all
	Ref Trc	X-value		Y-value	Fund	tion	Fun	ction Result	
M1	1	2.44	06 GHz	-6.78 dBm					
ype I						tion	Fun	ction Result	

10GHz - 15GHz

1Pk View					
			M1[1]		-63.87 dBr
0 dBm	_	_	-	1 1	14.95750 GH
-10 dBm					
20 GEN					
-20 dBm	_				
D1 -26.780 dBm	_	_			
-30 dBm					
40 dBm	-				
-50 dBm					
-60 dBm					
and all and the state of the second s			alahoo oo baalaha ka ahaa ka ahaa ka ahaa ka ahaa aha	to to a star and a ball (Marcol	Mary I washington day
Mugan and a contraction of the second	and modeling for	ATTO A 10 - Invited of	- In Malence Milling and Inc. of	Official Colline	
-90 dBm					
Start 10.0 GHz		1001 pl	5		Stop 15.0 GHz
1arker Type Ref Trc X-va		Y-value	Function	Fund	ion Result
	9575 GHz	-63.87 dBm	Function	Fullu	Ion Result

20GHz - 25GHz

Spectrum					(
Ref Level 10.00 dBn Att 20 dE	• SWT 100 ms •	RBW 100 kHz	Mode Auto Sweep		
1Pk View	• awi 100 ms • ·	DW 300 KHZ	Houe Auto Sweep		
			M1[1]	a	-62.03 dBm 20.27720 GHz
0 dBm					
-10 dBm					
-20 dBm					
-30 dBm D1 -26.780	dBm				
-40 dBm					
-50 dBm					
-60 dam	poline in the states of the second states of the se	a dista addiested	wa naterilan alak	in all hitsed and	d. and the set of some h
-70 dBm	Ultrasso Sou Paula	and the second second	and free of all and the all and	edite . tellinger	AMPLINE AL ANDROPOLOGICA
-80 dBm					
Start 20.0 GHz		1001 pt	5		Stop 25.0 GHz
Marker Type Ref Trc	X-value	Y-value	Function	Euncti	ion Result
M1 1	20.2772 GHz	-62.03 dBm	runcei011	Functi	on Nosure
- I.) Mercen		4/4





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Japan

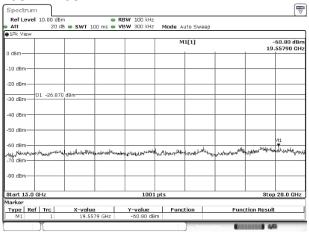
[BT_LE (1Mbps)] Channel: High 30MHz - 1GHz

Ref L	evel	10.00 dBm			RBW 100 kHz VBW 300 kHz	Mode A	to Curoo			
1Pk V	ew	20 00		J IIIS 🛡	VEW SOUTHE	MODE A	TIO 2005	þ		
0 dBm-						м	1[1]			68.95 dBn 3.450 MH
10 dBr										
20 dBr								_		
-30 dBr	D	1 -26.870	dBm							
40 dBr	n									
50 dBr	n									
60 dBr	n									
70 dBn	ก เครียงในงาณ	shuhulleteketen	Polantintalla	awy rooter	ingetterstanderenterstandere	M1 V Langel HHER	mundedin	ulia franklik kara	hangewatertart	allows manufic
80 dBr								_		
Start 3	10.0 M	Hz			1001	pts			Sto	pp 1.0 GHz
larker Type	Ref	Trc	X-value	1	Y-value	Func	tion	Eupr	tion Result	
M1	The I	1	563.4	NH7	-68.95 dBr		cion	1 dite	and the sur	

5GHz - 10GHz

•1Pk Vi		3 🖷 SWT 100 ms 🖷		Mode Auto Sweep		
				M1[1]		-64.53 dBn 6.90060 GH
0 dBm—					1 1	
-10 dBm						
-20 dBm						
-30 dBm	D1 -26.870	dBm	_			
-40 dBm						
-50 dBrr						
-60 dBm			M1			
SHORE BAR	three ories with the will be	a general contraction of the second	where me so high bearing of	aludayi ji sayalara kalera ji yayal	and the second and an and the second	medition and president
-90 dBm	c					
Start 5	.0 GHz		1001 p	ts		Stop 10.0 GHz
larker	Ref Trc	X-value	Y-value	Function	Function R	esult

15GHz - 20GHz



1GHz - 5GHz

Att 1Pk Vie	w.	20 u	B 🖷 SWT 100	ins 🖷	TOW SOU KHZ	mude A	uto Swee	h		
						M	2[1]			66.46 dB
0 dBm—									4.	74230 GI
5 GBIII				M1		M	1[1]		2	-6.87 dB 48050 GI
-10 dBm	_							-	2.	10030 0
-20 dBm	_									
	D1	-26.870	dBm					-		
-30 dBm										
40 dBm	_									
50 dBm										
60 dBm										
										M2
70 dBm	de Prata	un production	and the first of the states	et it falle	hallenterrotocora	KANTINGTON	-lo-abylite	والمعود والمعالية المراد	- and the state of	s-multi-literan
			5 ° ° '							
80 dBm										
Start 1.	0 GH:	2			1001 p	ts			Sto	p 5.0 GH
larker										
Туре	Ref		X-value		Y-value	Fund	tion	Fund	ction Result	
M1 M2		1	2.4805		-6.87 dBm -66.46 dBm					

10GHz - 15GHz

1Pk View				
		M1[1]		-64.17 dB
0 d8m			1 1	2.37010 GH
10 dBm				
20 dBm				
D1 -26.870 dBm				
30 dBm				_
40 dBm				_
50 dBm				
60 dBm	M1			
			2 37 3	100
and a lot a state and a lot a state of the s	manager the stand with the	المالا هرار المالي مالا المراج المراج	websterner the second road how	ordigent and relationship
90 dBm				
Start 10.0 GHz	1001 pl		St	op 15.0 GH
larker	1001 p		01	op toto arti
Type Ref Trc X-value	Y-value	Function	Function Res	ult
M1 1 12.3701 GH	z -64.17 dBm			

20GHz - 25GHz

Spectrum					(T
Ref Level 10.00 dBm	 RI SWT 100 ms V 	BW 100 kHz			
1Pk View	SWI 100 ms 🖷 V	DW 300 KH2	Mode Auto Sweep		
			M1[1]		-61.92 dBr 20.32220 GH
0 dBm				1 1	LUIDLEU
-10 dBm					
-20 dBm					
-30 dBm D1 -26.870 dBr	n				
-40 dBm					
-50 dBm					
-60 dBm		n daan midadhii a	تماينيستان ترياس	d outoutidae o ta cele	Mallaratisturageneitiveteleger
-70 dBm	a allowing the		Kanada Marina Marina Marina Marina M	Labore a Minar	and the second strategy and sheet
-80 dBm					
Start 20.0 GHz		1001 pt	5		Stop 25.0 GHz
larker Type Ref Trc	X-value	Y-value	Function	Functi	on Result
M1 1	20.3222 GHz	-61.92 dBm		T under	



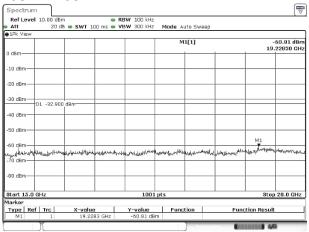
[BT_LE (2Mbps)] Channel: Low 30MHz - 1GHz

Spectrum	ı]					1
Ref Level	10.00 dB	m 🖷	RBW 100 kHz			
Att	20 d	B 🖷 SWT 100 ms 🖷	VBW 300 kHz	Mode Auto Swe	ep	
1Pk View						
				M1[1]	a a	-69.58 dBn 977.230 MH
0 dBm						
-10 dBm						
20 dBm —						
-30 dBm —	D1 -32.90) dBm				
40 dBm						
50 dBm-						
60 dBm						
70 dBm	dyreyretheol (b)	Hered Muriaerable to Million	hold windeling And the life of	ownort-unit filt out we	d-designed and the state of the	M1
00 dBm						
Start 30.0	MHz		1001 pt	5		Stop 1.0 GHz
larker						
Type Rel M1	f Trc	X-value 977.23 MHz	Y-value -69.58 dBm	Function	Function Re	esult
1411	1	977.23 MHZ	-09.58 OBM			

5GHz - 10GHz

1Pk View	(
				M	1[1]		-63.95 6.19630	
0 dBm						1	0.19030	un
-10 dBm—								
-20 dBm-								
-30 dBm-	D1 -32.900	dBm						
40 dBm-	01-02.000							
-50 dBm-								
-60 dBm-		MI						
How We have	Mar My presidentic	a groathering an arriver	، ۲۰۲۹، ۲۰۱۹، ۲۰۱۹، ۲۰۱۹، ۲۰۱۹، ۲۰۱۹، ۲۰۱۹، ۲۰۱۹، ۲۰۱۹، ۲۰۱۹، ۲۰۱۹، ۲۰۱۹، ۲۰۱۹، ۲۰۱۹، ۲۰۱۹، ۲۰۱۹، ۲۰۱۹، ۲۰۱۹، ۲	malhaman	Millentertrans	salutoriality	Alderson and a failed and a fai	w-ade
00 dBm-				_				
Start 5.0	GHz		10	01 pts			Stop 10.0 (GHz
larker	tef Trc	X-value	Y-value	Funct			on Result	

15GHz - 20GHz



1GHz - 5GHz

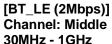
Ref Level	10.00 dB	m		RBW 100 kHz					
Att				VBW 300 kHz	Mode A	uto Swee	en.		
1Pk View	201		00 110 -	1011 000 1112	HOUL A	410 5466			
					M	2[1]			66.47 dB
0 dBm									.39460 CH
					M	1[1]			12.90 dB
-10 dBm			M1			í.		2	.40060 GH
-10 GBIII			Ţ						
-20 dBm									
20 0011									
-30 dBm									
-50 0011	D1 -32.90	0 dBm							-
-40 dBm									
TO GETT									
-50 dBm-									
-60 dBm							_	M2	
-70 dBm	and the loss	Later Job allia	BULLINK PRO	n location that any other	atomhar	المنهني ويتحد	اليدخصني ببيته ومسبيه	two and a second state of the	- much the
wartisean	- Alb Drown	a Mahlhad anna				2000 00			
-80 dBm-			-						
Start 1.0 G	Hz			1001 p	ts			St	pp 5.0 GHz
larker									
Type Ref	Trc	X-valu	e	Y-value	Fund	tion	Fun	ction Resul	t
M1	1	2.40	IO6 GHz	-12.90 dBm					
M2	1	4.39	46 GHz	-66.47 dBm					

10GHz - 15GHz

1Pk View					м	1[1]		-	63.88 dB
dBm						-		14.	52300 GH
10 dBm									
O GETT									
0 dBm									
0 dBm	1 -32.900	d0 m							
0 dBm	1 -32.900	UBI0							
iū dBm-							_		
0 dBm								~~~~	11
U dBm	للالاربي والمالية	n pertection has been been a	liphisture of the statest	ware many white	لله المراجعة المراجع	u/mjs://w	uldskillyrne,laboraethai	And Annilliand	htteredition of the
10 dBm									
tart 10.0 G	Hz			1001	pts			Stop	15.0 GH
arker Type Ref	Trc	X-value	-	Y-value	Func	tion	Eunr	tion Result	

20GHz - 25GHz

Spectrum					
Ref Level 10.00 dBn Att 20 dB	a SWT 100 ms .	RBW 100 kHz	Mode Auto Sweep		
1Pk View	5 • 3WI 100 ms •	VEW SOU KHZ	HODE YOU SWEET	,	
			M1[1]	10	-62.18 dBm 21.62090 GH;
0 dBm					
-10 dBm					
-20 dBm					
-30 dBm D1 -32.900	dBm				
-40 dBm					
-50 dBm					
-60 dBm	M1			n falle Mille Annual an	
-70 dBm	ferroardial/Autoritation and other	terme annon - e - tAN	and support of the second s	heretulingen altiteliefen die	ndelling of the states of the
-80 dBm					
Start 20.0 GHz		1001 pt	5		Stop 25.0 GHz
Marker Type Ref Trc	X-value	Y-value	Function	Functio	n Result
M1 1	21.6209 GHz	-62.18 dBm	Tunction	Turiació	in the state

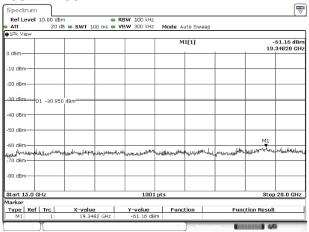


Spectrum		
Ref Level 10.00 dBm	 RBW 100 kHz 	
Att 20 dB - SWT 100 ms	VBW 300 kHz Mode Auto St	weep
1Pk View		
	M1[1]	-69.26 dBm
0 dBm		786.330 MH
o dom		
-10 dBm		
10 GB/II		
-20 dBm		
20 GB/II		
30.dBm		
30.dBm D1 -30.950 dBm		
-40 dBm-		
50 dBm-		
-60 dBm		
		M1
-70 dBm	المعرودا والمرالي المالية المربعة المرابع والمراجع المراجع	อสารางการการการการการการการการการการการการการก
이 것 같은 것 같아. 왜 같아.	a holds dealined in the standard and and	
-90 dBm		
Start 30.0 MHz	1001 pts	Stop 1.0 GHz
Jarker	2001 pt3	500p 1.0 ditz
Type Ref Trc X-value	Y-value Function	Function Result
M1 1 786.33 MH		. analdi Kasuk
TT IT		

5GHz - 10GHz

●1Pk Vi	ew					
				M1[1]		-63.50 dBm
0 dBm—					1 1	6.98550 GH
-10 dBn						
-20 dBn						
-30.dBo	D1 -30.95	0 dBm				
-40 dBn			_			
-50 dBn						
-60 dBn						
Mdratha	الطليبية مولاحما والم	ay in the state of the state of the state of the	whole the hillest free works	water-land water	where we have been a strategy of the	halle have be will be seen
-90 dBn						
Pt aut 5	.0 GHz		1001 p	-		Stop 10.0 GHz
larker	.0 0Hz		1001 p			3(0p 10.0 dHz
	Ref Trc	X-value	Y-value	Function	Function F	

15GHz - 20GHz



1GHz - 5GHz

Att	vel 10.00			RBW 100 kHz VBW 300 kHz	Mode A	uto Sweep			
1Pk Vie			100 115	1011 000 1112	Huue a	ato sweep			
					м	2[1]			-65.94 dB
0 dBm—									.33870 G
0 00111			M1		м	1[1]			-10.95 dB
-10 dBm			MI				1	2	
-20 dBm	-			-					
-30 dBm	D1 -30	.950 dBm	_						
40 dBm									
-50 dBm									
-60 dBm								M2	
						5		w l	
-70 dBm	المعمومة المحالية	na thread in a strength	unin tout +		when the state	للحور الفقاعورات والع	والتحجير المتعادية	edia falla conservations	a second but
	S	1.1							
-80 dBm									
Start 1.	0 GHz			1001 p	ts			St	op 5.0 GH
larker				In					
Type			alue	Y-value	Func	tion	Fund	ction Resul	t
M1 M2	1								
M1			2.4406 GHz 4.3387 GHz	-10.95 dBm -65.94 dBm					

10GHz - 15GHz

1Pk View			M1[1]		-63.91 dB
dBm-				5	10.19730 G
dBm					
10 dBm-					
20 dBm					
0.dBmD1 -30.	950_dBm				
O dBm					
i0 dBm-					
ið fið Brn		and the second second		instal	
U dBm	horgyphensintendentedestation	hallander of the second s	han shining to an initial for the state of t	, and the stand for the stand of the stand o	unity.uk www.wytheat
10 dBm					
tart 10.0 GHz		1001 pt	5		Stop 15.0 GH
arker Type Ref Trc	X-value	Y-value	Function	Function	Docult

20GHz - 25GHz

Spectrum			ĺ
Ref Level 10.00 dBm ·	RBW 100 kHz		
Att 20 dB	VBW 300 kHz	Mode Auto Sweep	
		M1[1]	-62.57 d 20.11740 (
I dBm			
10 dBm-			
20 dBm			
30.dBm D1 -30.950 dBm			
40 dBm			
50 dBm			
dBm-			
n hannen angelannen hannen fan heitige hereller heterskilde. 70 dBm	Aprildecethelither from	triplation,abilitationingiperoination	aylangar algerran an langerran and an
90 dBm			
Start 20.0 GHz	1001 pl	ts	Stop 25.0 G
arker Type Ref Trc X-value	Y-value	Function	Function Result
M1 1 20.1174 GHz	-62.57 dBm	Function	Function Result

Japan



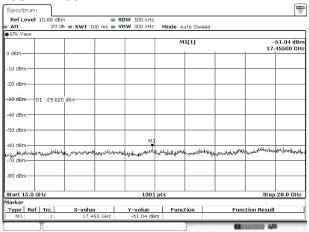
[BT_LE (2Mbps)] Channel: High 30MHz - 1GHz

	10.00 dBm		RBW 100 kHz			
Att		. SWT 100 ms		Mode Auto Swee	0	
1Pk View	20 00	- 3441 100 ms	TOR SOO KILL	HODE AUTO DWEE	p	
				M1[1]	a a	-69.58 dBr 634.190 MH
dBm-						
10 dBm						
20 dBm						
90-dBm	D1 -29.820	dBm				
40 dBm						
50 dBm			_			
60 dBm						
				M1		
70 dBm Mix/MiNUX/Mi 90 dBm	MANALUMA	ogðhelmetenturgerðelgerð aferreið	halaladimentionshed give	ส ุรีย _{าส} งสังสุขามีการใจไปไปเปล	entralidesi nyarata natarata	nikipi-yalayontohonandada
io upili						
tart 30.0	MHz	I	1001 pt	s		Stop 1.0 GHz
arker						
Type Ref		X-value	Y-value	Function	Function R	esult
M1	1	634.19 MHz	-69.58 dBm			

5GHz - 10GHz

1Pk View	1		_	M1[1]		-64.26 dBr
				milil		6.94560 GH
0 dBm						_
-10 dBm—						
20 dBm—						
90 dBm	D1 -29.820) dBm				
40 dBm—						
50 dBm-						
60 dBm—			M1			
WOYOOD AND	linguisted as the second	gert-fleshterstelsen son son de asse	When the second and second	hamphantuling	mandrawana	والتهم والمحاصلة
90 dBm—						
Start 5.0	GHz		1001 p	ts		Stop 10.0 GHz
larker						
Type R M1	ef Trc	5.9456 GHz	-64.26 dBm	Function	Function R	asult

15GHz - 20GHz



1GHz - 5GHz

Ref L	evel	10.00 dE	m		RBW 100 kHz					
Att		20	B SWT	100 ms 👄	VBW 300 kHz	Mode	Auto Swe	ep		
1Pk Vi	ew									
							M2[1]			-65.79 dB
									4	.91010 G
0 dBm—							M1[1]			-9.82 dB
				м	1					2.48050 GI
-10 dBr										
-20 dBm	-									
			1							
-30 dBm		1 -29.82	U dBm-							
-40 dBm										
-+0 CBH										
-50 dBm										
-30 GBH										
-60 dBm										
-00 GBH	· – –									M
-70 dBm					and the mainte			LIL NATER LANDARD	MAR MARINE MALINE	all' want
which where	and were	vitable	المعديقية وكالاتداء ولا	to star and figures	and static stations	for law to the	IN AL AL			
-80 dBm	_									
-00 GEN	·									
			-							
Start 1	.0 GH	z			1001	pts			St	op 5.0 GH
larker										
Type	Ref		X-valu		Y-value		unction	Fu	nction Resu	t
M1 M2		1		805 GHz 101 GHz	-9.82 dB -65.79 dB					
- M2		1	4.9	TOT GHZ	-05.79 OB					

10GHz - 15GHz

1Pk View						
				M1[1]		-64.51 dB
) dBm				-	1 1	14.55290 CH
10 dBm						
20 dBm						
90-dBm D	1 -29.820	dBm				
+0 dBm			_			
50 dBm			_			
60 dBm	Mulumbert	water	มและสารการสารการสาร	۲۰۰۹ ماریخانی از مانیان از ۲۰۰۹ میلیان از ۲۰۰۹	gulgerennerskynarheneners	Inspective minut
90 dBm						
tart 10.0 G	Hz		1001 pt	s		Stop 15.0 GH
arker Type Ref	Trc	X-value	Y-value	Function	Function Re	wilt

20GHz - 25GHz

Spectrum					(m) V
Ref Level 10.00 dBn Att 20 dB	n 👄 🖷 🖶 B 🖷 SWT 100 ms 🖷 V	88W 100 kHz	Mode Auto Sweep		
1Pk View	5 🖷 SWT 100 ms 🖷 V	BW 300 KH2	Mode Auto Sweep		
			M1[1]	10 3	-61.48 dBm 20.25720 GH
0 dBm					
-10 dBm					
-20 dBm					
-30 dBm D1 -29.820	dBm				
-40 dBm					
-50 dBm					
-60 0000	gergringegradenskyrgegelaanskildenskildenski	ul			
-70 dBm	and a second of the second of	dour the share of the	nt-ain-thanna ang abay pan-baran	white we we have a second s	Mappine Tourist Cartat Artesis
-80 dBm					
Start 20.0 GHz		1001 p	ts		Stop 25.0 GHz
Marker Tupo Pof Tro	X-value	Y-value	Function	Euno	tion Bosult
M1 1	20.2572 GHz	-61.48 dBm	Function	Fund	tion Result
	20.2572 GHZ	-01.48 UBM	- Mirasu		4,44



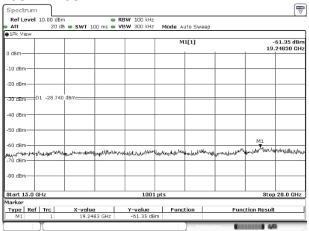
[BT_LE (LongRange S2)] Channel: Low 30MHz - 1GHz

Ref Lev	el 10.00 dB		RBW 100 kHz			
Att		B 🖷 SWT 100 ms 📟	VBW 300 kHz	Mode Auto Sweep	p	
1Pk Viev	v					
				M1[1]		-68.32 dBr
dBm					4 4	892.920 MH
0 dBm-	_					
20 dBm-						
0 dBm-	D1 -28.74	0 dBm				
0 dBm-						
i0 dBm-	-					
0 dBm-	_					
						M1
0 dBm-	a last strate to be	Marsh martine and martine	A	and the star is the star which	Land Land Million II at trade	un de la companya
reduction	Philippine and Conservation	enter all and the second second second	We wanted a state of the state	a Actific And an Amount	What free to a substration of a	di min di bulli cum
0 dBm-	_					
tart 30	0 MHz		1001 pt	5		Stop 1.0 GHz
arker						
	Ref Trc	X-value	Y-value	Function	Function Re	esult
M1	1	892.92 MHz	-68.32 dBm			

5GHz - 10GHz

Ref Level 10.00 d	3m 👄	RBW 100 kHz			
	dB 🖷 SWT 100 ms 🖷	VBW 300 kHz	Mode Auto Swee	p	
1Pk View			M1[1]		-64.41 dBn
0 dBm					6.65580 GH
-10 dBm		_			
-20 dBm					
-30 dBm D1 -28.7	40 dBm				_
-40 dBm					
-50 dBm					
-60 dBm					
worden uluman	110-110-110-1-10-10-10-10-10-10-10-10-10	we washing species	and and the states of the stat	house million of the long is said for	munderurscoling
-90 dBm					
Start 5.0 GHz		1001 p	ts		Stop 10.0 GHz
larker					
Type Ref Trc	X-value 6.6558 GHz	-64.41 dBm	Function	Function R	esult
	5.5550 GHz	0.1112 0011			4,40

15GHz - 20GHz



1GHz - 5GHz

Ref Lev	el 10.00	dBm		RBW 100 kHz			
Att	20	dB 🖷 SWT	100 ms 🖷	VBW 300 kHz	Mode Auto	Sweep	
1Pk Viev	v						
					M2[1]	1	-66.44 dB
							4.64640 G
0 dBm—					M1[1]	1	-8.74 dB
			M1				2.40060 G
-10 dBm-							
-20 dBm-							
		740 dBm					
-30 dBm-	D1 -28.	/4U dBm					
-40 dBm-	-						
-50 dBm-	-						
-60 dBm-	-						M2
			25 22		100.000		
70 dBm	aloughu dre	الواحرى بوروادا وروابوا والاردوار	MAN WARD	and the man and the second	Control Street Barry	الكالإ طاباته الباتي فهرمتهم حليتها	nd you have been and a state of the second
-80 dBm-	_		_				
Start 1.0	GHz		1	1001 p	ts		Stop 5.0 GH
larker					6-2-		
	Ref Trc	X-va	lue	Y-value	Function		unction Result
M1	1		4006 GHz	-8.74 dBm			
M2	1		6464 GHz	-66.44 dBm			

10GHz - 15GHz

Ref Level 10.00 dBm		RBW 100 kHz			
Att 20 dB 1Pk View	🖷 SWT 100 ms 📟	VBW 300 kHz	Mode Auto Swee	ep	
dBm			M1[1]		-64.35 dB 10.53700 GF
dom					
10 dBm					
20 dBm					
00 dBm D1 -28.740	dBm				
10 dBm					
i0 dBm-					
50 dBm - 1/1	~				
o dem	here much be any public th	all announ total a space and	nut beginner and an of the state	hispolitekanskarolekonstarle	ubdiser-shippleserablese
90 dBm					
tart 10.0 GHz		1001 pt	5		Stop 15.0 GH
arker Type Ref Trc	X-value	Y-value	Function	Function	Result
M1 1	10.537 GHz	-64.35 dBm	, and the	Function	The state

20GHz - 25GHz

Spectrum					[9
Ref Level 10.00 dBr		RBW 100 kHz			
	B 🖷 SWT 100 ms 📟	VBW 300 kHz	Mode Auto Swee	p	
1Pk View					
			M1[1]		-62.31 dB 21.72580 GI
I dBm					21.72580 0
10 dBm		_		_	
20 dBm					
0 dBm D1 -28.74) dBm				
40 dBm					
50 dBm					
50 dBm	M1				
Admin MAIn	.	La contration	s .	0.8.5 V	2.12 22.4
70 dBm	interviet have made and the state of the sta	and the second	the and the second second second	hold we we the here and	san for the second stand
o abin					
0 dBm					
tart 20.0 GHz		1001 -	·		0100 05 0 011
arker		1001 p	115		Stop 25.0 GH
Type Ref Trc	X-value	Y-value	Function	Function	Posult
M1 1	21.7258 GHz	-62.31 dBm	ranscion	runction	i no son



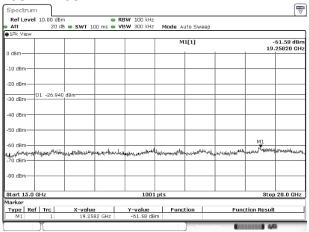
[BT_LE (LongRange S2)] Channel: Middle 30MHz - 1GHz

Att	.0.00 dBn 20 dB	s SWT 100 ms	RBW 100 kHz VBW 300 kHz	Mode Auto Swee	p	
1Pk View				M1[1]		-69.09 dBn
				MILI		771.790 MH
dBm						
10 dBm						
20 dBm —						
30 dBm	-26.940	dBm	_			
+0 dBm						
50 dBm						
50 dBm						
					M1	
70 dBm	rensinghaby	hor rubble line all horis	adden all works and the lot	muniteduritation	shallow have been a standard and the sta	estile states and
90 dBm —						
tart 30.0 M	Hz		1001 pl	5		Stop 1.0 GHz
arker	- 1					
M1 N1	1	X-value 771.79 MHz	Y-value -69.09 dBm	Function	Function Re	sult

5GHz - 10GHz

Ref Level 10.00 dB		RBW 100 kHz			`
Att 20 d	B 🖷 SWT 100 ms 📟	VBW 300 kHz	Mode Auto Swee	p	
DEK VIBW			M1[1]		-64.94 dBn 6.93560 GH
0 dBm			1	1 1	
-10 dBm					
-20 dBm					
-30 dBm D1 -26.94	dBm				
-40 dBm					
-50 dBm					
-60 dBm		MI			
BORDER MARINE	a watalatina analaladi maahallaw	white districtly share the	ilinuition or the best for the	ويغل معاطعة ويحمد ومعاطعة والمستعطعا	and and a manufacture
-90 dBm					
Start 5.0 GHz		1001 p	ts		Stop 10.0 GHz
Marker Type Ref Trc	X-value	Y-value	Function	Function R	locult
M1 1	6.9356 GHz	-64.94 dBm	Function	Function R	esuit

15GHz - 20GHz



1GHz - 5GHz

Att	vel 10.0		SWT		RBW 100 kHz VBW 300 kHz	Mode	Auto Swee	20		
1Pk Vie	w									
						1	42[1]			66.79 dB
0 dBm—									4.	65030 CI
o obiii				M1			M1[1]			-6.94 dB
-10 dBm-				Ť			í.	1	Z.	44060 G
-TO ODITI-										
-20 dBm-										
all durin										
-30 dBm-	D1 -2	6.940	dBm-							
oo aam										
-40 dBm-	_						_			
-50 dBm-	_			_	_					
-60 dBm-	_				_		_			
										M2
70 dBm		di na i		when they we	anti-atomakon ikan olar	anadatati	househow	فيدادنها والدانية والمتحدث	landistan a conference	A Wallson Josep
in all the second second	nandrandhai	helandors	Wheelshin	Antender				~		
-80 dBm-	_							_		
Start 1.	D CH2				1001	nte			Qt /	p 5.0 GH
larker	o an ic	_			1001	pes				p ole all
	Ref Tro	- 1	X-val		Y-value	Eur	ction	Eun	ction Result	
M1		1		406 GHz	-6.94 dB		celon	1 dil	celon result	
M2		1		503 GHz	-66.79 dB					

10GHz - 15GHz

1Pk View				M1[1]		-64.37 dB
				witil		14.90760 GH
) dBm					1 1	
10 dBm						
20 dBm						
30 dBm D	1 -26.940	dBm				
+0 dBm						
50 dBm						
50 dBm						
					11.2	1.1.1
98-10-10 March	When a flat	angener washing and	warner while the second of the	or the work of the first started by	a free and de the provide a state of the sta	new hours
90 dBm						
tart 10.0 G	Hz		1001 p	ts		Stop 15.0 GHz
arker						
Type Ref	Trc	X-value	Y-value	Function	Function Re	sult

20GHz - 25GHz

Att 20 dB SWT 100 ms VBW 300 kHz Mode Auto Sweep	Spectrum								
1Pk View M1[1] -62.10 d 0 dBm 20.34720 i -10 dBm 20.34720 i -10 dBm 20.34720 i -20 dBm 20.34720 i -20 dBm 20.34720 i -30 dBm 20.34720 i -40 dBm 20.34720 i -50 dBm 20.34720 i -60 dBm 20.34720 i -70 dBm 20.34720 i				RBW 100 kHz		to Ewoon			
0 dBm 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34720 1 20.34		20 U		5 - VBW 500 KHz	MODE AU	to Sweep			
10 dBm					M1	[1]			62.19 dBn 34720 GH
20 dBm 01 -26.940 /Bm 40 dBm 50 dBm	J dBm								
-30 dBm01 -26.040 dBm -40 dBm	-10 dBm								
30 dBm 40 dBm 50 dBm 60 dBM 40mp-vertiss-เมลงส์สนุกระศ.เมลงส์หนูกระศ.เมลาในการปละการปละไปหนูกระโลกไปและการการปละปฏะประการการปละปฏะประการปละปฏะประการ	20 dBm								
50 ปีชา	-30 dBm	01 -26.940	dBm						
60 <u>ระทั่งวิ</u> ปะการศึกลี 70 ธัยการแกรดระสมสัสกรรรมสาร์แกรดระสมสาร์แกรดสารการสมกรรมสารการการการการการการการการการการการการกา	40 dBm								
	-50 dBm								
	-60 dBm	~	10 10	de la deba	1. 17 1. 17				5
	-70 dBm	nywatekejejek	alethere for states	Man Bally of Parally provided in the second s	angereter and the state of the	the been when	har and a state of the second s	liedpacy-bland	han all here and
Start 20.0 GHz 1001 pts Stop 25.0 G		Hz		100:	1 pts			Stop	25.0 GHz
larkor				1					
Type Ref Trc X-value Y-value Function Function Result M1 1 20.3472 GHz -62.19 dBm -62.19 dBm <td< td=""><td></td><td></td><td></td><td></td><td></td><td>ion</td><td>Fund</td><td>tion Result</td><td></td></td<>						ion	Fund	tion Result	



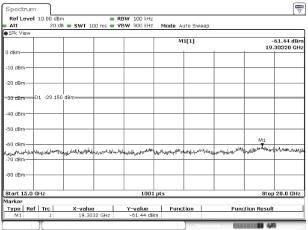
[BT_LE (LongRange S2)] Channel: High 30MHz - 1GHz

Ret Level	10.00 dBr	n	RBW 100 kHz	Mode Auto Swee		
1Pk View	20 0	5 • 5 • 100 ms •	VDW 300 KHZ	MODE AUTO SWEE	έþ	
) dBm				M1[1]	5 7	-69.48 dBn 925.870 MH
UBIII						
10 dBm						
20 dBm						
30 dBm 0	1 -29.150) dBm				
40 dBm						
50 dBm-						
60 dBm						
70 dBm						M1 Y
n Hi-muhlini 90 dBm	entrelle-austrelle-	hereiniketterijolovaatsallaatsusyiks	bendetedad-ghebraholdskilleforme	ulkardingelandigheiden	d-alistikenspetertikerson	hannen hannen halve
JU UBIII						
Start 30.0 M	Hz		1001 pl	5		Stop 1.0 GHz
larker						
M1 N1	1	925.87 MHz	-69.48 dBm	Function	Function R	esuit

5GHz - 10GHz

			M1[1]		-64.60 dBr 6.39610 CH
dBm					
10 dBm					
20 dBm					
30 dBm D1 -29.1	50 dBm				
40 dBm					
50 dBm					
60 dBm	M1				
Hereletter and the party	performante and and the offer	all and a show and	werkennedterharturg	way with here with the surfleering	معالموارج ومحطك الغريسين
90 dBm					
start 5.0 GHz		1001 p	ts		Stop 10.0 GHz
arker Type Ref Trc	X-value	Y-value	Function	Function Re	

15GHz - 20GHz



1GHz - 5GHz

	vel 10.00					100 kHz					
Att 1Pk Vier		20 dB 🖷	SWT 1	30 ms 🖷	VBW	300 kHz	Mode A	uto Swee	ρ		
TEK AIG							M	2[1]			-66.45 dB
										4	79420 G
0 dBm—	_						M	1[1]			-9.15 dB
				M	1					2	.48050 G
-10 dBm-					-						
-20 dBm-											
-20 ubrii-											
-30 dBm-	D1 -29	0.150 dB	m								
oo aam											
40 dBm-	_				_						
-50 dBm-	_				-				_		
-60 dBm-					-				-		M2
								1.5. 8	and a stiller at	and had	henter
A-MAANY	AM Month	mound	hout the Part	allowed and the	Pollogen	restricted in the second	and maintain	Post & Barry	مهرو خالفان والمحصور والمعالية والمعالية والمحالية والمحالية والمحالية والمحالية والمحالية والمحالية والمحالية	Marker	AND COLOR OF A
		· ·									
-80 dBm-											
Start 1.) GHz					1001	ots			Ste	op 5.0 GH
larker											
Type	Ref Trc	1	X-value	. 1	Y	-value	Fund	tion	Fun	ction Result	t
M1	1		2.48	05 GHz		-9.15 dBm					
M2	1		4.79	42 GHz		-66.45 dBm	n				

10GHz - 15GHz

Ref Level 10.00 dBm Att 20 dB • SWT 100 m	 RBW 100 kHz VBW 300 kHz Mode Auto 	5weep
1Pk View		
	M1[:	1] -63.75 dB 14.91760 Gi
0 dBm		
-10 dBm		
10 08/11		
-20 dBm		
30 dBm D1 -29.150 dBm		
40 dBm		
-+0 GBm		
-50 dBm		
-60 dBm		
hour deven for all have been and an and a for the second	may be when the second share build the public source	decontrolling and a spectrum and a manual of the second second second second second second second second second
, o della		
-80 dBm		
Start 10.0 GHz	1001 pts	Stop 15.0 GH
larker Type Ref Trc X-value	Y-value Functio	n Function Result
M1 1 14.9176 G		in Function Result

20GHz - 25GHz

Spectrum					[1
Ref Level 10.00 dB	m - F B - SWT 100 ms - V	BW 100 kHz	Mode Auto Sweep		
1Pk View	10 - SWI 100 ms - V	BW 300 KH2	MODE AUTO Sweep		
			M1[1]	6 6	-62.24 di 20.27720 G
0 dBm					
-10 dBm					
-20 dBm					
-30 dBm D1 -29.15	0 dBm				
-40 dBm					
-50 dBm					
-60 den			10 1 40 1 10 1 4 1		
-70 dBm	noridhidanosily. Advited and a	L-RANGERINGS -	verselynalther thomas laver they	veral and a subsection	Manylacipalistiken französiglerskäri
-90 dBm					
Start 20.0 GHz		1001 p	ts		Stop 25.0 GF
larker			1		
Type Ref Trc	X-value 20.2772 GHz	-62.24 dBm	Function	Func	tion Result
M1 1	20.2772 GHz	-62.24 dBm	At prove (4,44



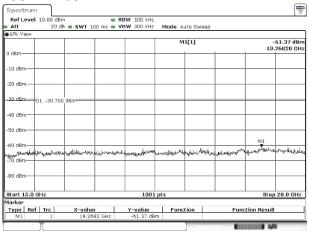
[BT_LE (LongRange S8)] Channel: Low 30MHz - 1GHz

	10.00 dBr		RBW 100 kHz			
Att	20 d	8 🖷 SWT 100 ms 🖷	VBW 300 kHz	Mode Auto Swee	p	
1Pk View				M1[1]		-68.70 dBr 977.230 MH
dBm-						
10 dBm						
20 dBm						
30 dBm	01 -30.700) dBm				
+0 dBm						
50 dBm-						
0 dBm						
						MI
10 dBm	dun her fish in the	alliel with the second started at the second	nanhaanan 1641 hinten jalaraa	howard warder with the shall	and the second state of the second second	noundlinework
90 dBm						
tart 30.0 M	đHz		1001 pt	s		Stop 1.0 GHz
arker Type Ref	Trc	X-value	Y-value	Function	Function Re	cult
		A VOIDE	-68.70 dBm	runction	r unction Re	suit

5GHz - 10GHz

	n B 🖷 SWT 100 ms 🖷	RBW 100 kHz VBW 300 kHz	Mode Auto Swee	p	
1Pk View			M1[1]		-64.34 dBn 6.75570 CH
0 dBm				1 1	6.75570 GH
-10 dBm					
-20 dBm					
-30 dBm) dBm				
-40 dBm					
-50 dBm					
-60 dBm	Mi	_			
-years and the second states of the	where a state and the second states of the second	M. Hould serve have	were, and the strated of the	where which the selling of the second	inspiratellinetal
-80 dBm					
Start 5.0 GHz		1001 p	ts		Stop 10.0 GHz
Marker Type Ref Trc	X-value	Y-value	Function	Function Re	
Type Ref Trc M1 1	6.7557 GHz	-64.34 dBm	Function	Function Re	suit

15GHz - 20GHz



1GHz - 5GHz

Ref Le	vel :	LO.00 dBr		100 ms •	RBW 100 k		lodo i	uto Cuion			
1Pk Vie	9W	20 U	D - SWI	100 ms 📟	VDW 300 F	In 2 In	IOOE A	uto Swee	p		
-							M	2[1]			67.01 dB
0 dBm—											.68630 G
5 6511				M1			м	1[1]			-10.70 dE .40060 G
-10 dBm	_			MI						2	
-20 dBm	-				-	_			_	-	-
30 dBm	-D:	1 -30.700	dBm				_		_		
40 dBm	-					_			_		
50 dBm											
SU GBII											
-60 dBm	_				_	_					
											M2
70 dBm		Luket als	a the date	ARCH & MUSH	appartment and	UNALIM	apravel	- Market Market	evenineis/work	h which dramat	and so you
		abut we have	A ADDRESS OF		1	1. 1			~		
80 dBm	-					_			_		
Start 1.	0 GH	z			10	001 pts				Sto	op 5.0 GH
larker											
Type	Ref		X-va		Y-valu		Func	tion	Fun	ction Result	t
M1		1		4006 GHz	-10.70						
M2		1	4.	6863 GHz	-67.01	. aem					

10GHz - 15GHz

Spectrun									
Ref Leve	1 10.00 dBr			RBW 100 kHz VBW 300 kHz	Mode Au	to Ewor			
1Pk View	20 0	9 - 9 WI 1	Ju ins 🖝	VDW 300 KHZ	HUUP AL	to swee	P		
0 d8m					M	[1]	1		64.44 dBr 96750 CH
U UBIII									
-10 dBm							_		
-20 dBm				_			_		
-30 dBm	D1 -30.700	dBm							
-40 dBm									
-50 dBm-									
-60 dBm							_		
-70 dBm	gradenal adjust	ondenskanski, Assold	-markalane given	boom/bachternapue	urhhrubyhnur	ymrudha	alilety and a real of the second	timiterrecept	Humanshahuhuh
-90 dBm									
Start 10.0	GHz			1001	pts			Stop	15.0 GHz
larker Type Re	f Trc	X-value	- 1	Y-value	Funct	ion	Eun	ction Result	
M1	1		75 GHz	-64.44 dB		-			
						50 m m			2

20GHz - 25GHz

Spectrum					
Ref Level 10.00 Att		RBW 100 kHz ms VBW 300 kHz			
1Pk View	5 UB - SWI 100	THIS W YOW SOU KHZ	MODE AUTO SWEE	,	
			M1[1]	10 <i>2</i>	-62.83 dBn 20.01750 GH
) dBm					
10 dBm					
20 dBm					
30 dBm D1 -30	1.700 dBm				
40 dBm					
50 dBm					
60 dBm	2. 7				510 - 45 - 62
70 dBm	เป็นแหล่งหลังสู่หลังสู่หลังสู่หลังสู่ไม่สุดที่ไ	Mannoblachalyinginorth	and the second s	usilikansensi	used the property of the second se
00 dBm					
Start 20.0 GHz		1001	pts		Stop 25.0 GHz
larker		1	1		-
Type Ref Trc M1 1		Y-value GHz -62.83 dB	Function	Function	Result



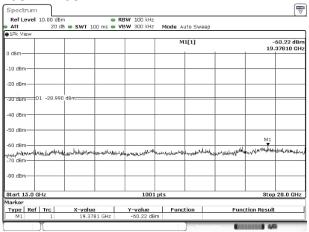
[BT_LE (LongRange S8)] Channel: Middle 30MHz - 1GHz

	10.00 dBr		RBW 100 kHz			
Att 1Pk View	20 d	B 🖶 SWT 100 ms 🖷	VBW 300 KHz	Mode Auto Swee	2p	
dBm				M1[1]	9 P	-69.20 dBr 923.930 MH
dbiii						
.0 dBm					_	
20 dBm						
o dem D	1 -28.99() dBm				
0 dBm						
i0 dBm						
0 dBm						
0 dBm						M1
WWWWWWWWW	and a second second	าดสูปหนังรู้ปนุณหมัดสาวมุรสไปหล่างสู่และ-	rtrhaticaethdowithattenedical	AUNU-WARDAN PLANGTER	angelligeterreturgerer/livedberu	and he and the second
U GBM						
tart 30.0 M	Hz	1	1001 p	5		Stop 1.0 GHz
arker Type Ref	Teo	X-value	Y-value	Function	Function R	locult
M1 M1	1	923.93 MHz	-69.20 dBm	Function	Function R	esuit

5GHz - 10GHz

Ref Level 10.00 dB Att 20 (1Pk View	18 🖷 SWT 100 ms 🖷	RBW 100 kHz VBW 300 kHz	Mode Auto Sweep	p	
			M1[1]		-64.17 dBr 6.71080 GH
0 dBm					
-10 dBm					
-20 dBm					
30 dBm D1 -28.99	0 dBm=====				
40 dBm					
-50 dBm					
60 dBm	MI				
Worlden Man Ultraterston	here with the set with the polyter term was	way for the shad	unneder Hubacime	way an interest of the second	Ubracklerienal to autoba
-90 dBm					
Start 5.0 GHz		1001 p	ts		Stop 10.0 GHz
larker Type Ref Trc	X-value	Y-value	Function	Function R	locult
M1 1	6.7108 GHz	-64.17 dBm	Function	Function	esuit

15GHz - 20GHz



1GHz - 5GHz

Ref Lev	el 10.00 d	Bm		RBW 100 kHz					
Att	20	dB . SWT 10	0 ms 🖷	VBW 300 kHz	Mode A	uto Swee	ep :		
1Pk View									
					M	2[1]			66.45 dB
0 dBm									68630 CI
0 0Bm-			M1		M	1[1]			-8.99 dB
			T NIL			í.		2.	44060 GI
-10 dBm—									
00 JD									
-20 dBm-									
	D1 -28.9	00 d0m							
-30 dBm-	-DI -20.9	90 ubm							
-40 dBm-									
-+0 CBm-									
-50 dBm-									
-30 GBIII-									
-60 dBm-									
-00 GBIII-									M2
70 dBm				underson and the second second		and a linda of a		bardastaille	melioppinites
abran material	Humbert	pitte a pitte a state perform	of PTINUM	no ha na ann an an an an	(Deno-entre-	dida di an			
-80 dBm-									
00 0011									
Start 1.0	GHz			1001 p	ts			Sto	p 5.0 GH
larker									
Type R		X-value		Y-value	Fund	tion	Fund	tion Result	
M1 M2	1		36 GHz	-8.99 dBm -66.45 dBm					
14/2	1	4.08	10 GHZ	-00.45 OBM					

10GHz - 15GHz

a e swr 100 ms e	RBW 100 kHz VBW 300 kHz	Mode Auto Sweep		
5 • 3W1 100 ms •	TOR SOO KIL	Hude Auto Sweet		
		M1[1]	a a	-63.87 dBr 14.62290 GH
dBm				
usm				
				Influence Munastres
an a	eritestikustation, australiteitestika	an an interingenticitation	PUROTIVITY TO A SALAN	shikani, fura ipraylar.
	1001 pl	5		Stop 15.0 GHz
X-value	Y-value	Function	Functio	on Result
14.6229 GHz	-63.87 dBm			
	X-value	ດ	ອັດມູສະຊາເປລະໄຊແລະເຊດຈາກອາຊີແລະເປັນອາຊີແລະອາຊີ 1001 pts X-volue Y-volue Function	ກາງກາງກາງສະດີແຫຼງກາງກາງກາງກາງກາງກາງກາງກາງກາງກາງກາງກາງກາງ

20GHz - 25GHz

Spectrum					(**
Ref Level 10.00 dBm Att 20 dB	• SWT 100 ms • 1	RBW 100 kHz	Mode Auto Sweer		
1Pk View	• awi 100 ms • ·	BW 300 KHZ	House Yorn 2meet	,	
			M1[1]		-62.19 dBm 20.34720 GHz
0 dBm					
-10 dBm					
-20 dBm					
-30 dBm D1 -28.990	dBm				
-40 dBm					
-50 dBm					
-60 dBm	101 at 164 1	a	a 36		
-70 dBm	energial frank of the providence of the second s	references the second and the	ilailyetinenenenenenen	way gave the opposite	hownerserver
-80 dBm					
Start 20.0 GHz		1001 pt	5		Stop 25.0 GHz
Marker Type Ref Trc	X-value	Y-value	Function	Euno	ion Result
M1 1	20.3472 GHz	-62.19 dBm	Function	Funci	IUII NESUL
			At a set		111111 4 3 4



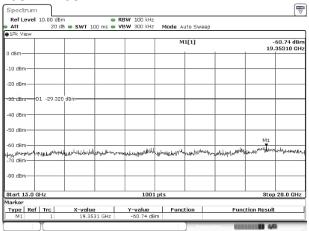
[BT_LE (LongRange S8)] Channel: High 30MHz - 1GHz

Ref Leve	10.00 dB	m 👄 18 🖷 SWT 100 ms 🖷	RBW 100 kHz	Mode Auto Swee		
1Pk View	200		TOH SOO KIL	HOLE AUTO DWEE	P.	
I dBm				M1[1]	4	-69.21 dBr 965.600 MH
GBIII						
10 dBm						
20 dBm						
30 dBm	D1 -29.32	0 dBm-				
+0 dBm						
50 dBm-						
50 dBm-						
70 dBm						M1
م الم الم الم الم الم الم	drantial/7m/4la	an Ineventional interestion of the section	rhoused-wildler-videdars	Chyladioliohaicerthilk	erer felfingene grin nes genoes an alle	สารเกิดสารคลายความ
90 dBm						
tart 30.0	MHz		1001 pt	5		Stop 1.0 GHz
arker Type Re	f Trc	X-value	Y-value	Function	Function R	sult
M1	1	965.6 MHz	-69.21 dBm	ranstion	, unction M	

5GHz - 10GHz

Ref Level 10.00 dBn		RBW 100 kHz			
Att 20 de 1Pk View	8 🖷 SWT 100 ms 🖷	ARM 300 KHS	Mode Auto Swee	p	
			M1[1]		-65.05 dBn 6.97050 GH
0 dBm					
-10 dBm					
-20 dBm					
-30 dBm D1 -29.320	dBm-				
-40 dBm					
-50 dBm					
-60 dBm		M			
Mondern Manuar Jakustah	primerships of the second	Helindranterior	-	a share in the second property is	nunutametiteritet
-80 dBm					
Start 5.0 GHz		1001 p	ts		Stop 10.0 GHz
larker					
M1 1	X-value 6.9705 GHz	-65.05 dBm	Function	Function R	esult

15GHz - 20GHz



1GHz - 5GHz

Att	ver 1t	.00 dBr	n B 🖷 SWT 1	00 mc =		# 100 kHz	Mode	uto Cuipor			
1Pk Vie	w	20 u	5 - 5 WI 1	uu ms 🖷	٧D	N 300 KH2	MODE A	uto Sweep			
				1			M	2[1]			66.12 dB
0 dBm—										4.	95800 GI
U UBIII-				м	1		M	1[1]			-9.32 dB
-10 dBm	_				ŕ			-	-	2.	48050 G
-20 dBm	_										
-30 dBm	D1	-29.320	1 dBm								
50 0011	-										
40 dBm	_				-				_		
-50 dBm											
SU CEIT											
-60 dBm	_										
											- C - C - C - C - C - C - C - C - C - C
70 dBm	n	ومروادية	Walk Marker and	- Latter buch	Wnite	allow and the provide	Printeradory	butthe	have a level and the second	distantine transfel likes	(U)WMMAN
	20 C		ST - 25								
-80 dBm											
Start 1.	0 GHz					1001	ots			Sto	p 5.0 GH
larker					_						
Type	Ref	frc	X-valu	e		Y-value	Fund	tion	Fund	tion Result	
M1		1		05 GHz		-9.32 dBm					
M2		1	4.9	58 GHz		-66.12 dBm	1				

10GHz - 15GHz

1Pk View						
				M1[1]		-64.26 dB
0 dBm				1 1		10.64690 GF
10 dBm						
20 dBm —						
30 dBm	D1 -29.320	dBm				
40 dBm	· · · · · ·					
50 dBm-						
60 dBm —	M1					. 26
10 dBm	patt basedersport	longebechik perjak bergi selamb	handeraletaletration itsite	hand whether a second figures of	MUNICHANGANACHAN	hadedan ann an allan hafrair
90 dBm						
Start 10.0	GHz		100	1 pts		Stop 15.0 GH
larker Type Rei	(I mark)	X-value	1	1	1 5	iction Result
M1 M1	Trc	10.6469 GH	Y-value 1z -64.26 d	Function	Fur	iction Result

20GHz - 25GHz

Spectrum					("
Ref Level 10.00 dBr	n B e SWT 100 ms e	TOP IT 200 MILE	Martin Line Course		
1Pk View	b 🖷 SWI 100 ms 📟	VBW 300 KH2	Mode Auto Sweep		
			M1[1]		-62.29 dBr 20.33720 GH
0 dBm					
-10 dBm					
-20 dBm					
30 dBm D1 -29.320	dBm				
40 dBm		_		-	
-50 dBm					
-60 dB/1				a shite a	hivedgelakeerstersterstersterkelige
-70 dBm	danna an Alfredder Annes anda	hind a stallage and the	all the same of the source of	and a second	and service to a fair the association of the
-90 dBm					
Start 20.0 GHz		1001 p	ts		Stop 25.0 GHz
larker Type Ref Trc	X-value	Y-value	Function	Eup	ction Result
M1 1	20.3372 GHz	-62.29 dBm	, and the	- Tune	and the soft



4.5 Spurious Emissions - Radiated -

4.5.1 Measurement procedure

[FCC 15.247(d), 15.205, 15.209, KDB558074 D01 v05r02]

Test was applied by following conditions.

Test method Frequency range Test place EUT was placed on Antenna distance	:	ANSI C63.10 9kHz to 25GHz 3m Semi-anechoic chamber Styrofoam table / (W)1.0m × (D)0.8m × (H)0.8m (below 1GHz) Styrofoam table / (W)0.6m × (D)0.6m ×(H)1.5m (above 1GHz) 3m
Test receiver setting - Detector - Bandwidth Spectrum analyzer setting - Peak - Average	:	Below 1GHz Average (9kHz-90kHz, 110kHz-490kHz), Quasi-peak 200Hz, 120kHz Above 1GHz RBW=1MHz, VBW=3MHz, Span=0Hz, Sweep=auto RBW=1MHz, VBW=3kHz (1Mbps), 10kHz (2Mbps), 1kHz (LongRange S2, S8), Span=0Hz, Sweep=auto Display mode=Linear

Average Measurement Setting [VBW]

Mode	Duty Cycle (%)	T _{on} (us)	T _{off} (us)	1/T _{on} (kHz)	Determined VBW Setting
Bluetooth 5.3 LE (1Mbps)	60.86	381	245	2.625	3kHz
Bluetooth 5.3 LE (2Mbps)	31.36	196	429	5.102	10kHz
Bluetooth 5.3 LE (Long Range S2)	56.44	1061	819	0.943	1kHz
Bluetooth5.3 LE (Long Range S8)	82.47	3101	659	0.322	1kHz

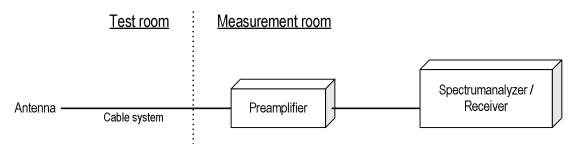
Although these tests were performed other than open area test site,

adequate comparison measurements were confirmed against 30 m open are test site. Therefore, sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 937606.

Radiated emission measurements are performed at 3m distance with the broadband antenna (Loop antenna, Biconical antenna, Log periodic antenna, Double ridged guide antenna and Broad-band horn Antenna). The antenna is positioned both the horizontal and vertical planes of polarization and height is varied 1m to 4m and stopped at height producing the maximum emission. As for the Loop antenna, it is positioned with its plane vertical, and the center of the Loop antenna is 1m above the ground plane. The EUT is Placed on a turntable, which is 0.8m/1.5m above ground plane. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. The test results represent the worst case emission for each emission with manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation. Sufficient time for the EUT, support equipment, and test equipment are allowed in order for them to warm up to their normal operating condition.



- Test configuration



4.5.2 Calculation method

[9kHz to 150kHz] Emission level = Reading + (Ant factor + Cable system loss) Margin = Limit – Emission level

[150kHz to 25GHz] Emission level = Reading + (Ant factor + Cable system loss - Amp. Gain) Margin = Limit – Emission level

Example:

Limit @ 4804.0MHz: 74.0dBuV/m (Peak Limit) S.A Reading = 39.9dBuV Cable system loss = 8.3dB Result = 39.9 + 8.3 = 48.2dBuV/m Margin = 74.0 - 48.2 = 25.8dB

4.5.3 Limit

Frequency	Field s	Distance		
[MHz]	[uV/m]	[dBuV/m]	[m]	
0.009-0.490	2400 / F [kHz]	20logE [uV/m]	300	
0.490-1.705	24000 / F [kHz]	20logE [uV/m]	30	
1.705-30	30	29.5	30	
30-88	100	40.0	3	
88-216	150	43.5	3	
216-960	200	46.0	3	
Above 960	500	54.0	3	

Note:

1. The lower limit shall apply at the transition frequencies.

2. Emission level [dBuV/m] = 20log Emission [uV/m]

3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition modulation.

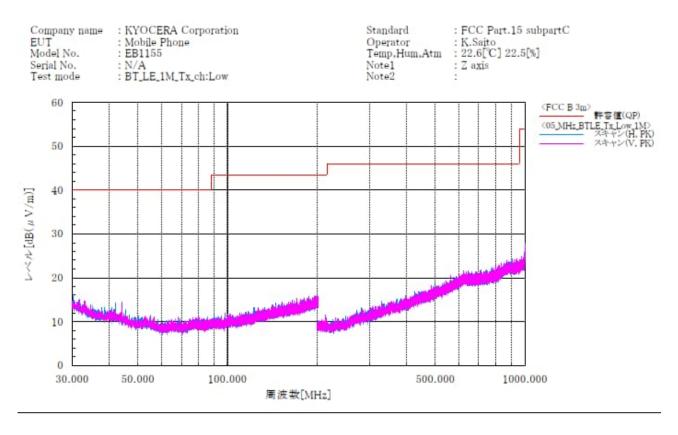


4.5.4 Test data

Date Temperature Humidity Test place	 28~29-October-2022 23.8 [°C] 27.4 [%] 3m Semi-anechoic chamber 	Test engineer :	Tadahiro Seino
Date Temperature Humidity Test place	 29-October-2022 23.2 [°C] 29.4 [%] 3m Semi-anechoic chamber 	Test engineer :	Chiaki Kanno
Date Temperature Humidity Test place	 28-November-2022 22.6 [°C] 22.5 [%] 3m Semi-anechoic chamber 	Test engineer :	Kazunori Saito
Date Temperature Humidity Test place	: 29-November-2022 : 22.5 [°C] : 25.9 [%] : 3m Semi-anechoic chamber	Test engineer :	Kazunori Saito



[Transmission mode] [BT_LE (1Mbps)] Channel: Low BELOW 1 GHz



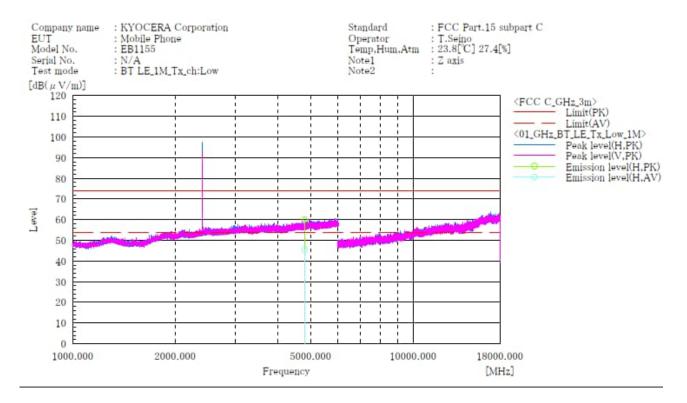
Final Result

Note:

- 1. Emission Level (Margin) = Limit [Reading + Factor (Antenna + Cable Amp)]
- 2. No emission were detected in frequency range 9kHz to 30MHz at the 3 meters distance.



[BT_LE (1Mbps)] Channel: Low ABOVE 1 GHz



Final Result

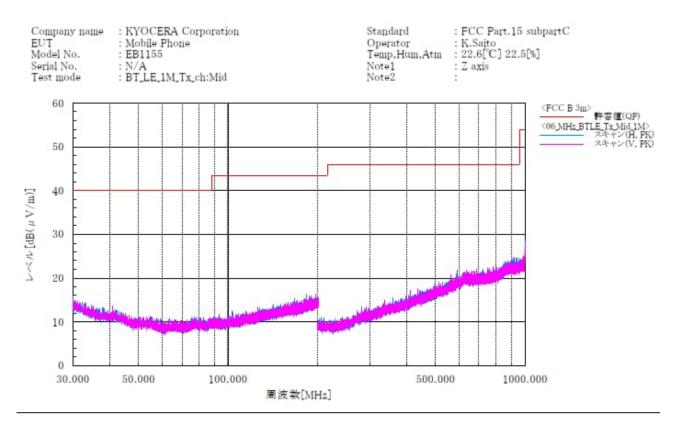
No.	Frequency	(p)	Reading	Reading	c.f	Result	Result	Limit	Limit	Margin	Mergin	Height	Angl*	Remark
1	[MHz] 4804.000	H	[dB(µV)] 49.9	[dB(µV)] 35.4	[dB(1/m)] 10.2	[dB(µV/n)] 60.1	$[dB(\mu V/m)]$ 45.6	[dB(µV/n)] 74.0	AV [dB(µV/m)] 54.0	[dB] 13, 9	[dB] 8,4	[cm] 100,0	207.0	

Note:

1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable - Amp)]



[BT_LE (1Mbps)] Channel: Middle BELOW 1 GHz

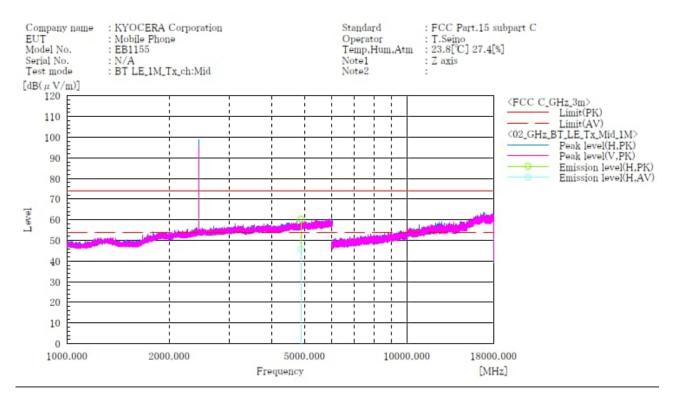


Final Result

- 1. Emission Level (Margin) = Limit [Reading + Factor (Antenna + Cable Amp)]
- 2. No emission were detected in frequency range 9kHz to 30MHz at the 3 meters distance.



[BT_LE (1Mbps)] Channel: Middle ABOVE 1 GHz



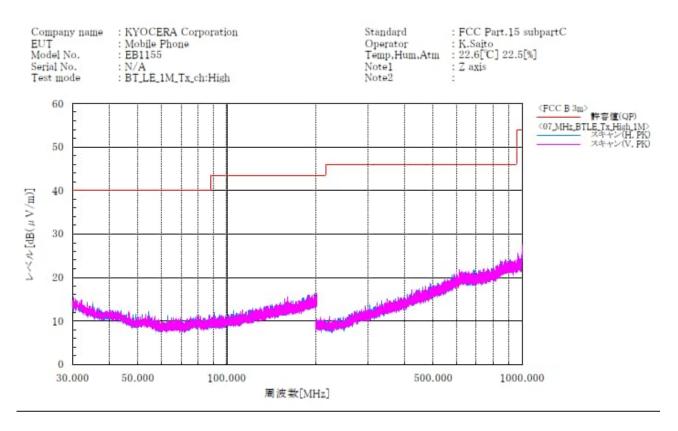
Final Result

No.	Frequency	(P)	Reading	Reading	c. 1	Result	Result	Limit	Linit	Margin	Margin	Height	Angle R	emark
1	[MH:] 4880,000	Н	PK [dB(µV)] 50,0	AV [dB(µV)] 35,4	[dB(1/m)] 10.4	$\begin{bmatrix} dB(\mu V/m) \\ 60.4 \end{bmatrix}$	AV [dB(μV/m)] 45.8	$[dB(\mu V/n)]$ 74.0	Limit AV [dB(μ V/m)] 54.0	[dB] [3, 6	AV [dB] 8,2	[cm] 100.0	203.0	

- 1. Emission Level (Margin) = Limit [Reading + Factor (Antenna + Cable Amp)]
- 2. No emission were detected in frequency range 18GHz to 25GHz at the 3 meters distance.



[BT_LE (1Mbps)] Channel: High BELOW 1 GHz

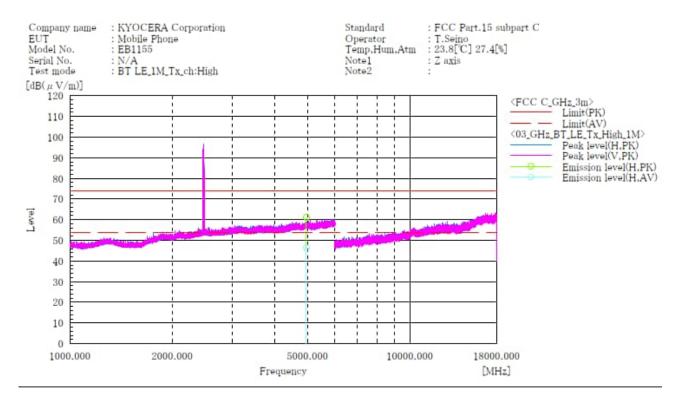


Final Result

- 1. Emission Level (Margin) = Limit [Reading + Factor (Antenna + Cable Amp)]
- 2. No emission were detected in frequency range 9kHz to 30MHz at the 3 meters distance.



[BT_LE (1Mbps)] Channel: High ABOVE 1 GHz



Final Result

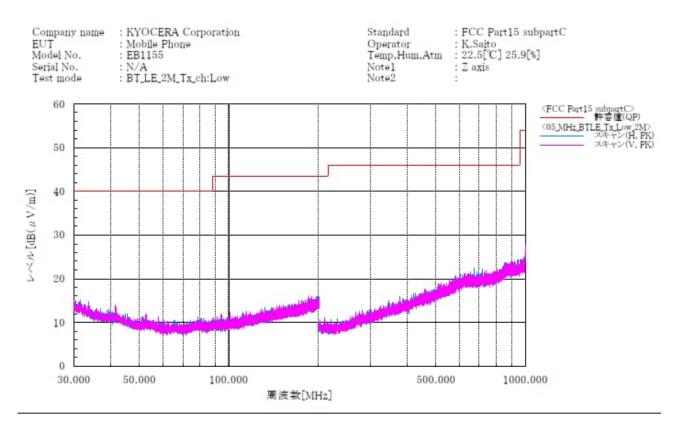
No.	Frequency	(P)	Reading	Reading	c. f	Result	Result	Limit. PK	Limit	Mergin	Mergin	Height	Angl#	Remark
1	[MHz] 4960,000	Н	[dB(µV)] 50.2	[dB(µV)] 35.4	[dB(1/m)] 11.0	[dB(µV/m)] 61.2	[dB(µV/m)] 46.4	[dB(µV/n)] 74.0	AV [dB(μV/m)] 54.0	[4B] 12.8	[dB] 7.6	[cm] 119.0	206,0	

Note:

1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable - Amp)]



[BT_LE (2Mbps)] Channel: Low BELOW 1 GHz

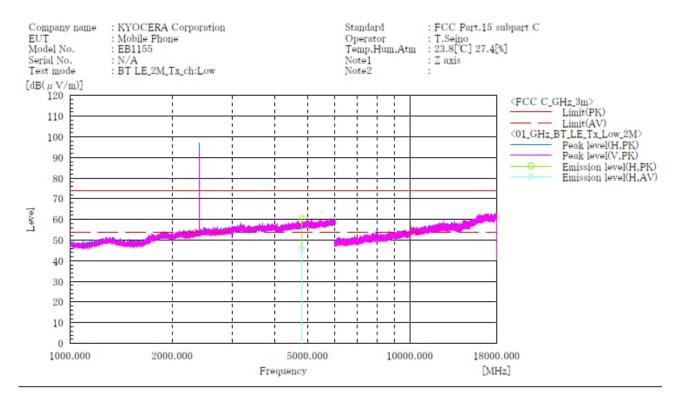


Final Result

- 1. Emission Level (Margin) = Limit [Reading + Factor (Antenna + Cable Amp)]
- 2. No emission were detected in frequency range 9kHz to 30MHz at the 3 meters distance.



[BT_LE (2Mbps)] Channel: Low ABOVE 1 GHz



Final Result

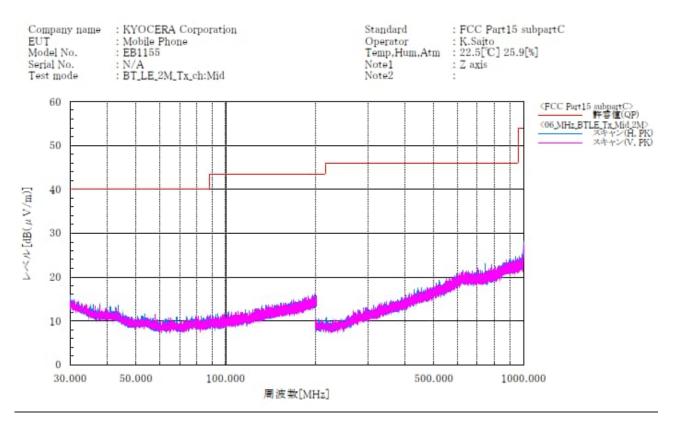
No.	Frequency	(P)	Reading	Reading	c. f	Result	Result	Limit PK	Limit	Margin	Margin AV	Height	Angle	Remark
1	[MH:] 4804.000	H	[dB(µV)] 50.0	[dB(µV)] 35.4	[dB(1/m)] 10.2	[dB(µV/m)] 60.2	[dB(µV/m)] 45.6	[dB(µV/m)] 74.0	Limit AV [dB(µV/m)] 54.0	[dB] 13.8	[dB] 8.4	[cm] 100, 0	208.0	

Note:

1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable - Amp)]



[BT_LE (2Mbps)] Channel: Middle BELOW 1 GHz

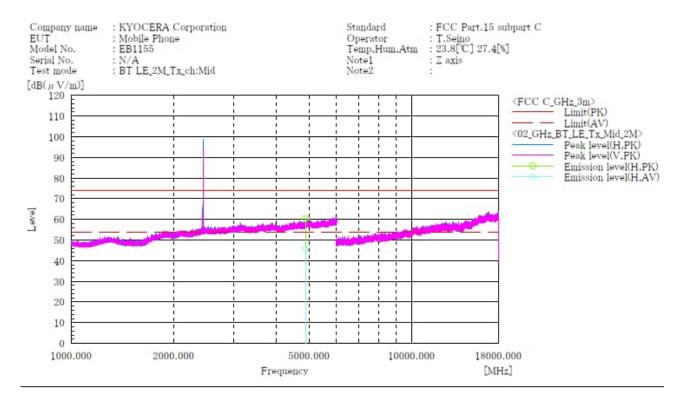


Final Result

- 1. Emission Level (Margin) = Limit [Reading + Factor (Antenna + Cable Amp)]
- 2. No emission were detected in frequency range 9kHz to 30MHz at the 3 meters distance.



[BT_LE (2Mbps)] Channel: Middle ABOVE 1 GHz



Final Result

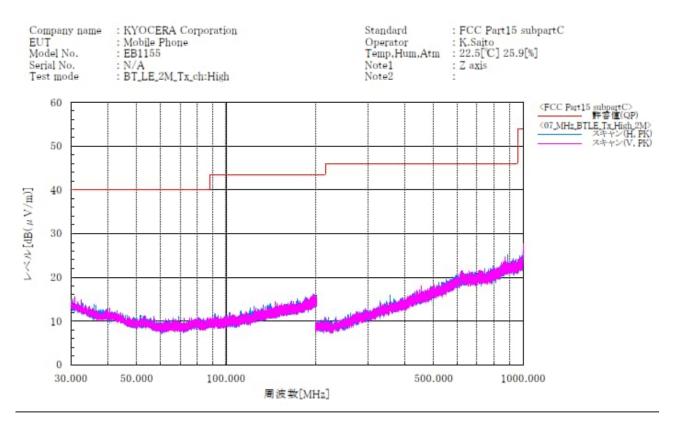
No.	Frequency	(P)	Reading	Reading	c. f	Result	Result	Limit	Linit	Margin	Margin	Height	Angle	Remark
1	[MH:] 4880,000	Н	PK [dB(µV)] 50.1	AV [dB(µV)] 35,3	[dB(1/m)] 10.4	[dB(µV/m)] 60, 5	AV [dB(µV/m)] 45.7	[dB(µV/n)] 74.0	AV [dB(µV/m)] 54.0	PK [dB] [3.5	[dB] 8.3	[cm] 100.0	202.0	

Note:

1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable - Amp)]



[BT_LE (2Mbps)] Channel: High BELOW 1 GHz

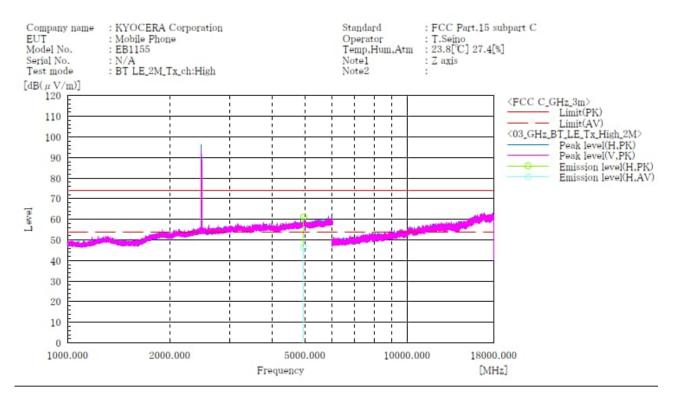


Final Result

- 1. Emission Level (Margin) = Limit [Reading + Factor (Antenna + Cable Amp)]
- 2. No emission were detected in frequency range 9kHz to 30MHz at the 3 meters distance.



[BT_LE (2Mbps)] Channel: High ABOVE 1 GHz



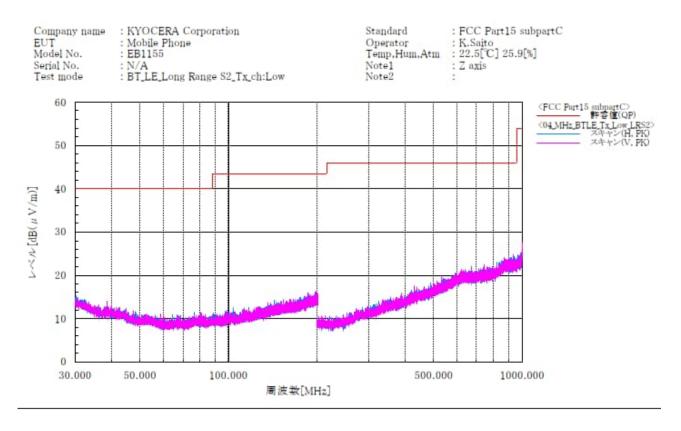
Final Result

No.	Frequency	(P)	Reading	Reading	C. 1	Result	Result	Limit	Linit	Margin	Mergin	Height	Angle	Remark
			PK	AV		PK	AV	PK	AV	PK	AV			
	[MHz] 4960,000		$[dB(\mu V)]$	$[dB(\mu V)]$	[dB(1/m)]	$[dB(\mu V/m)]$	$[dB(\mu V/m)]$	$[dB(\mu V/n)]$	AV [dB(μV/m)] 54.0	[dB]	[dB]	[cm]	C 1	
1	4960,000	H	50, 2	35. 4	11.0	61.2	46.4	74.0	54.0	12.8	7.6	116.0	205.0	

- 1. Emission Level (Margin) = Limit [Reading + Factor (Antenna + Cable Amp)]
- 2. No emission were detected in frequency range 18GHz to 25GHz at the 3 meters distance.



[BT_LE (LongRange S2)] Channel: Low BELOW 1 GHz

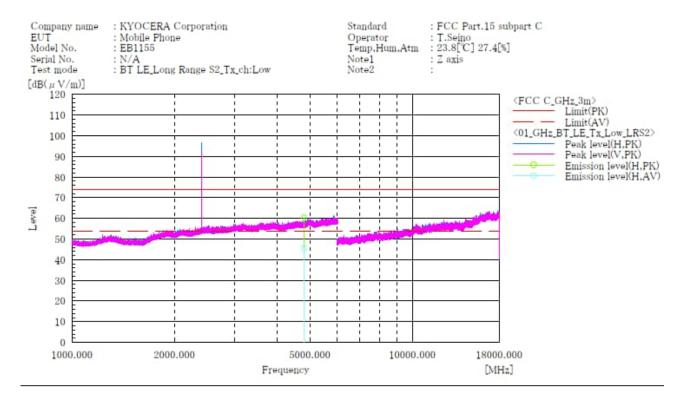


Final Result

- 1. Emission Level (Margin) = Limit [Reading + Factor (Antenna + Cable Amp)]
- 2. No emission were detected in frequency range 9kHz to 30MHz at the 3 meters distance.



[BT_LE (LongRange S2)] Channel: Low ABOVE 1 GHz



Final Result

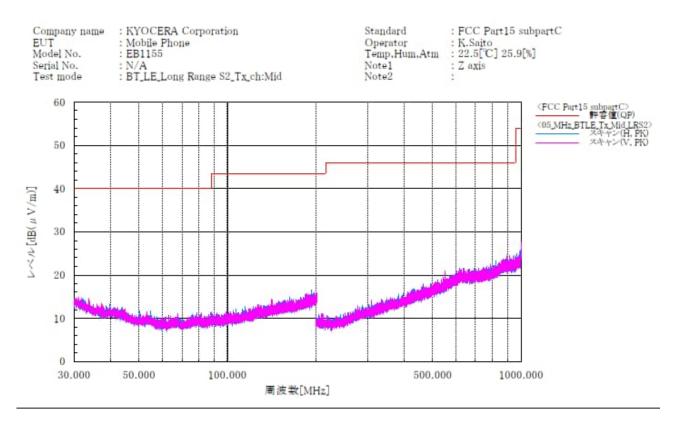
No.	Execution	(P)	Reading	Reading	c. f	Result	Result	Limit	Limit	Margin	Margin	Height	Angle	Remark
1	[MH:] 4804.000	Н	[dB(µV)] 50.0	[dB(µV)] 35.4	[dB(1/m)] 10.2	[dB(µV/n)] 60.2	[dB(µV/m)] 45.6	[dB(µV/n)] 74.0	AV [dB(µV/m)] 54.0	[dB] 13.8	[dB] 8,4	[cm] 100, 0	205, 0	

Note:

1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable - Amp)]



[BT_LE (LongRange S2)] Channel: Middle BELOW 1 GHz

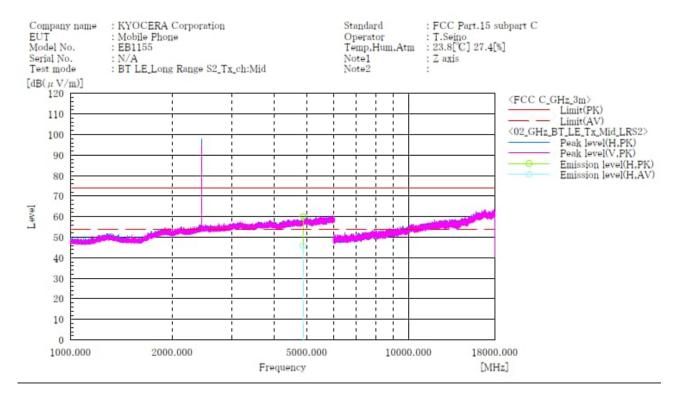


Final Result

- 1. Emission Level (Margin) = Limit [Reading + Factor (Antenna + Cable Amp)]
- 2. No emission were detected in frequency range 9kHz to 30MHz at the 3 meters distance.



[BT_LE (LongRange S2)] Channel: Middle ABOVE 1 GHz



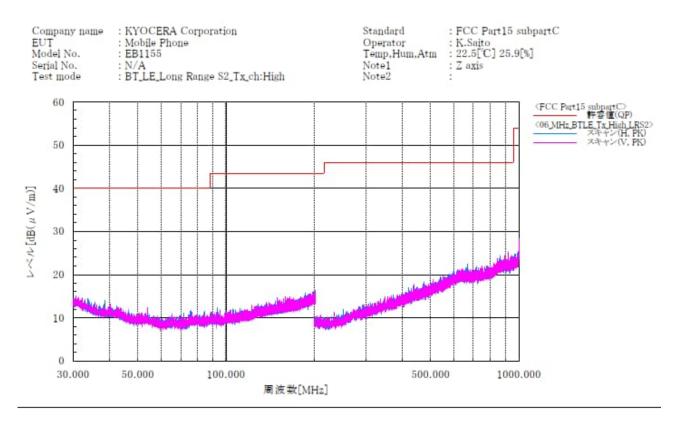
Final Result

No.	Frequency	(P)	Reading	Rending	c. f	Result	Result	Limit	Linit	Margin	Mergin	Height	Angle	Remark
	Der. 7		PK	AV	Em (a /.).1	PK	AV	PK	AV	PK	AV	r 1		
1	[MHz] 4880,000	Н	49.7	35.4	10.4	60.1	45.8	74.0	AV [dB(μV/m)] 54.0	13.9	8.2	100.0	203.0	

- 1. Emission Level (Margin) = Limit [Reading + Factor (Antenna + Cable Amp)]
- 2. No emission were detected in frequency range 18GHz to 25GHz at the 3 meters distance.



[BT_LE (LongRange S2)] Channel: High BELOW 1 GHz

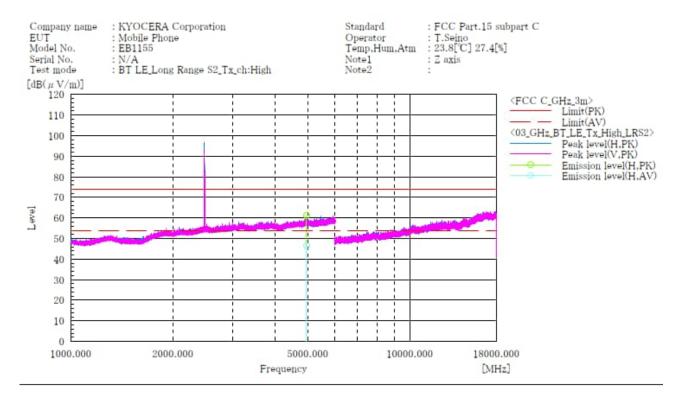


Final Result

- 1. Emission Level (Margin) = Limit [Reading + Factor (Antenna + Cable Amp)]
- 2. No emission were detected in frequency range 9kHz to 30MHz at the 3 meters distance.



[BT_LE (LongRange S2)] Channel: High ABOVE 1 GHz



Final Result

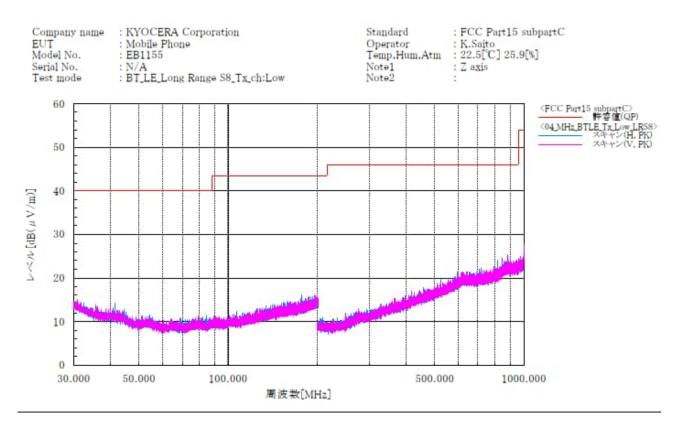
No.	Frequency	(p)	Reading	Reading	c. f	Result	Result	Limit PK	Linit	Margin	Margin	Height	Angl#	Remark
1	[MHz] 4960,000	Н	[dB(µV)] 50.3	[dB(µV)] 35,5	[dB(1/m)] 11.0	[dB(µV/m)] 61.3	[dB(µV/m)] 46.5	[dB(µV/n)] 74.0	Limit AV [dB(µV/m)] 54.0	[dB] 12.7	[dB] 7.5	[cm] 100.0	208,0	

Note:

1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable - Amp)]



[BT_LE (LongRange S8)] Channel: Low BELOW 1 GHz

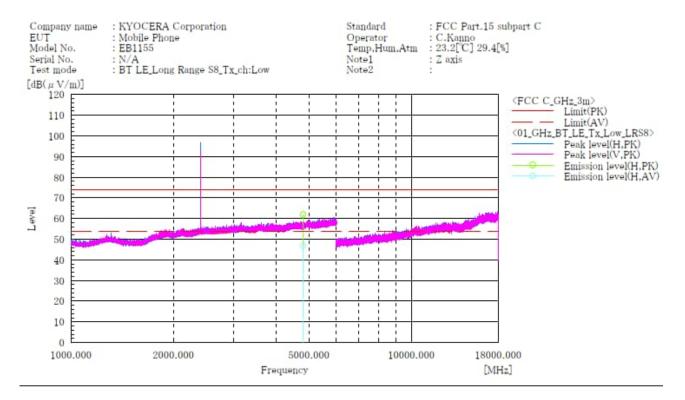


Final Result

- 1. Emission Level (Margin) = Limit [Reading + Factor (Antenna + Cable Amp)]
- 2. No emission were detected in frequency range 9kHz to 30MHz at the 3 meters distance.



[BT_LE (LongRange S8)] Channel: Low ABOVE 1 GHz



Final Result

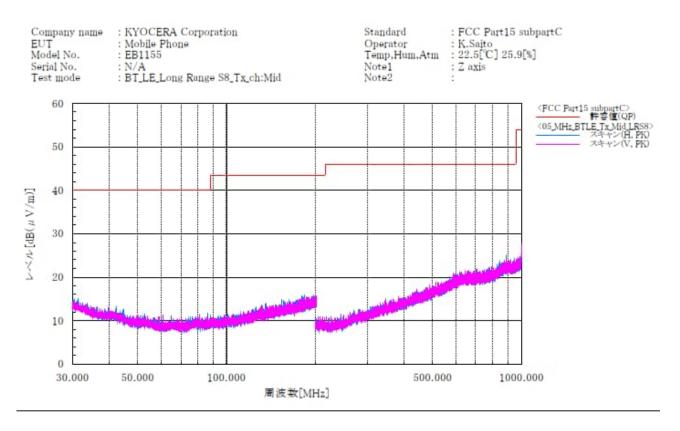
No.	Fredneticy	(P)	Reading	Reading	c. f	Result	Result	Limit	Limit	Margin	Margin	Height	Angle Remark
1	[MH:] 4804.000	H	[dB(µV)] 51.7	[dB(µV)] 36,8	[dB(1/m)] 10.2	[dB(µV/m)] 61.9	[dB(µV/m)] 47.0	[dB(µV/n)] 74.0	Limit AV [dB(μ V/m)] 54.0	[dB] 12.1	[dB] 7.0	[cm] [00, 0	213.0

Note:

1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable - Amp)]



[BT_LE (LongRange S8)] Channel: Middle BELOW 1 GHz

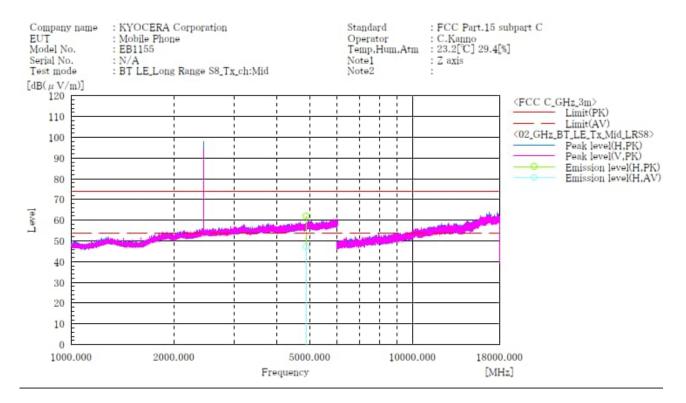


Final Result

- 1. Emission Level (Margin) = Limit [Reading + Factor (Antenna + Cable Amp)]
- 2. No emission were detected in frequency range 9kHz to 30MHz at the 3 meters distance.



[BT_LE (LongRange S8)] Channel: Middle ABOVE 1 GHz



Final Result

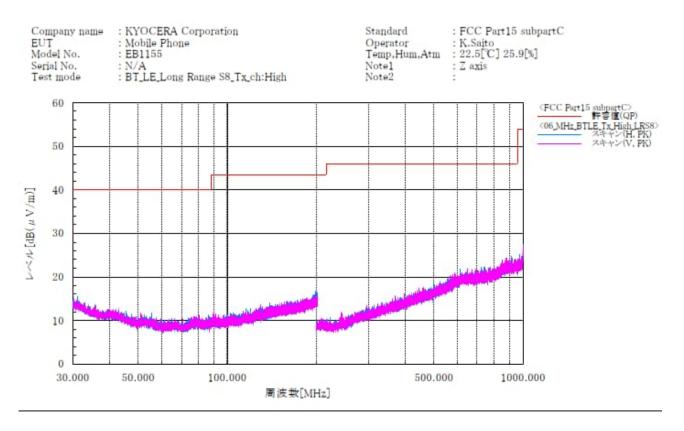
No.	Frequency	(P)	Reading	Reading	c. f	Result	Result	Limit	Limit	Margin	Margin	Height	Angle Re	emark
1	[MH:] 4880,000	H	[dB(µV)] 51,6	[dB(µV)] 36.8	[dB(1/n)] 10.4	[dB(µV/m)] 62.0	[dB(µV/m)] 47.2	[dB(µV/n)] 74.0	$\begin{bmatrix} \text{Limit} & AV \\ AV \\ [dB(\mu V/m)] & 54.0 \end{bmatrix}$	[dB] 12.0	[dB] 6.8	[cm] 100, 0	213.0	

Note:

1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable - Amp)]



[BT_LE (LongRange S8)] Channel: High BELOW 1 GHz

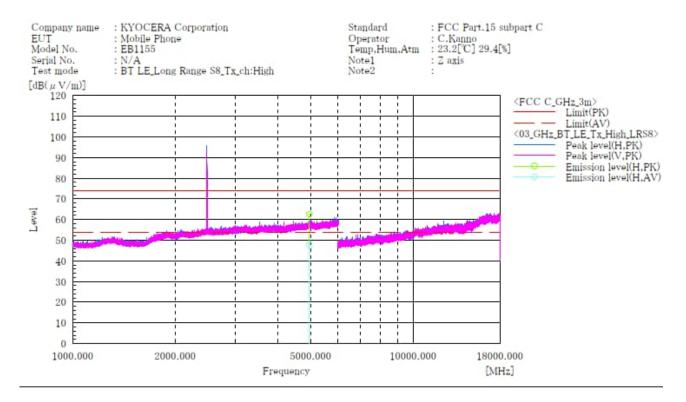


Final Result

- 1. Emission Level (Margin) = Limit [Reading + Factor (Antenna + Cable Amp)]
- 2. No emission were detected in frequency range 9kHz to 30MHz at the 3 meters distance.



[BT_LE (LongRange S8)] Channel: High ABOVE 1 GHz



Final Result

No.	Frequency	(P)	Reading	Reading	c. f	Result	Result	Limit PK	Limit	Margin	Mergin	Height	Angl*	Remark
1	[MHz] 4960,000	H	[dB(µV)] 51.7	[dB(µV)] 36.8	[dB(1/m)] 11.0	[dB(µV/n)] 62.7	[dB(µV/m)] 47.8	[dB(µV/n)] 74.0		[dB] 11.3	[dB] 6.2	[cm] 100, 0	205.0	

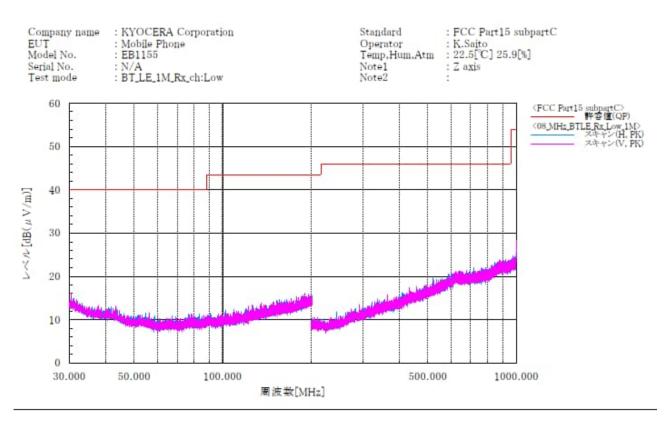
Note:

1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable - Amp)]



[Receive mode]

Channel: Low BELOW 1 GHz

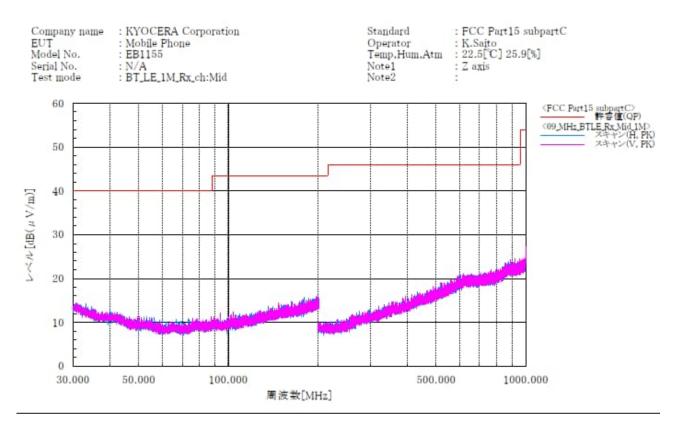


Final Result

- 1. Emission Level (Margin) = Limit [Reading + Factor (Antenna + Cable Amp)]
- 2. No emission were detected in frequency range 9kHz to 30MHz and 1GHz to 25GHz at the 3 meters distance.



Channel: Middle BELOW 1 GHz

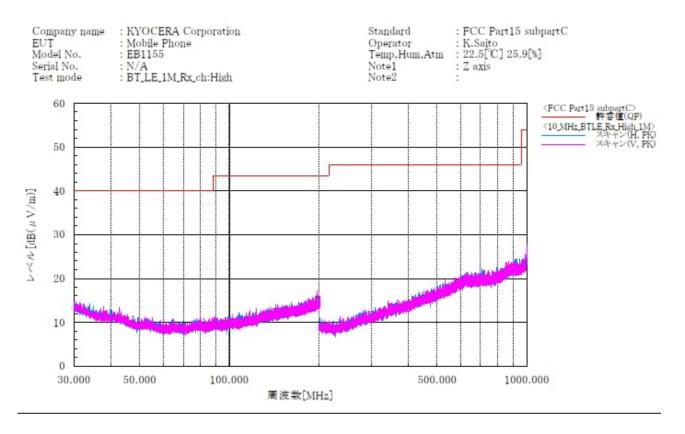


Final Result

- 1. Emission Level (Margin) = Limit [Reading + Factor (Antenna + Cable Amp)]
- 2. No emission were detected in frequency range 9kHz to 30MHz and 1GHz to 25GHz at the 3 meters distance.



Channel: High BELOW 1 GHz



Final Result

- 1. Emission Level (Margin) = Limit [Reading + Factor (Antenna + Cable Amp)]
- 2. No emission were detected in frequency range 9kHz to 30MHz and 1GHz to 25GHz at the 3 meters distance.



4.6 Restricted Band of Operation

4.6.1 Measurement procedure

[FCC 15.247(d), 15.205, 15.209, KDB558074 D01 v05r02]

Test was applied by following conditions.

Test method Test place EUT was placed on Antenna distance	::	ANSI C63.10 3m Semi-anechoic chamber Styrofoam table / (W)1.0m × (D)0.8m × (H)0.8m (below 1GHz) Styrofoam table / (W)0.6m × (D)0.6m ×(H)1.5m (above 1GHz) 3m
Spectrum analyzer setting - Peak - Average	:	RBW=1MHz, VBW=3MHz, Span=Arbitrary setting, Sweep=auto RBW=1MHz, VBW=3kHz (1Mbps), 10kHz (2Mbps), 1kHz (LongRange S2, S8), Span=0Hz, Sweep=auto Display mode=Linear

Average Measurement Setting [VBW]

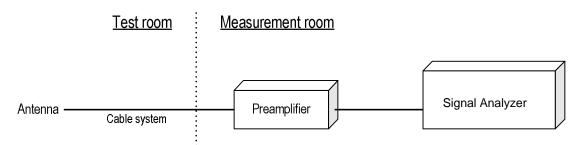
Mode	Duty Cycle (%)	T _{on} (us)	T _{off} (us)	1/Ton (kHz)	Determined VBW Setting
Bluetooth 5.3 LE (1Mbps)	60.86	381	245	2.625	3kHz
Bluetooth 5.3 LE (2Mbps)	31.36	196	429	5.102	10kHz
Bluetooth 5.3 LE (Long Range S2)	56.44	1061	819	0.943	1kHz
Bluetooth 5.3 LE (Long Range S8)	82.47	3101	659	0.322	1kHz

Although these tests were performed other than open area test site,

adequate comparison measurements were confirmed against 30 m open are test site. Therefore, sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 937606.

Radiated emission measurements are performed at 3m distance with the broadband antenna (Loop antenna, Biconical antenna, Log periodic antenna, Double ridged guide antenna and Broad-band horn Antenna). The antenna is positioned both the horizontal and vertical planes of polarization and height is varied 1m to 4m and stopped at height producing the maximum emission. As for the Loop antenna, it is positioned with its plane vertical, and the center of the Loop antenna is 1m above the ground plane. The EUT is Placed on a turntable, which is 0.8m/1.5m above ground plane. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. The test results represent the worst case emission for each emission with manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation. Sufficient time for the EUT, support equipment, and test equipment are allowed in order for them to warm up to their normal operating condition.

- Test configuration





4.6.2 Limit

Emission at the boundary of the restricted band provided by 15.205 shall be lower than 15.209 limit.

4.6.3 Measurement result

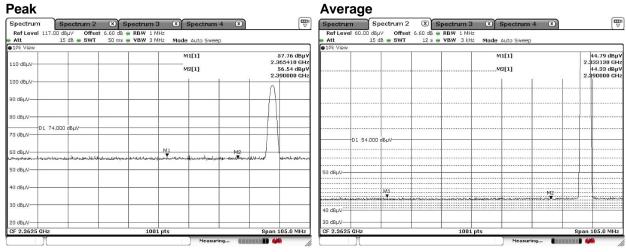
Channel	Frequency [MHz]	Results Chart	Result
Low	2402	See the Trace Data	Pass
High	2480	See the Trace Data	Pass

4.6.4 Test data

Date	:	6-December-2022			
Temperature	:	22.6 [°C]			
Humidity	:	30.5 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Tadahiro Seino



[BT_LE (1Mbps)] Channel: Low Horizontal



Vertical Peak

Peak									Avera	ige								
Spectrum	Spectrum 2	× 5	pectrum 3	× ×	Spectrum	4 🗴			Spectrum	s	pectrum 2	×	Spectrum 3	×s	pectrum	4 ×		
Ref Level 117.		et 6.60 dB 🗧							Ref Level				BBW 1 MHz					
Att	15 dB 🖷 SWT	50 ms 🖷	VBW 3 MI	Hz Mode	Auto Swee	p			Att	15	ib 🖷 SWT	12 s	BW 3 kHz	Mode A	uto Sweep			
1Pk View									●1Pk View									
				м	1[1]			58.71 dBµ∀ .384710 GHz						M1	[1]			44.95 dBp 2.360090 GH
110 dBµV				м	2[1]		2.	56.20 dBµV							[1]			44.26 dBµ
					-1-1		2	390000 GHz			1	1			1			2.390000 GH
100 dBµV		-				-										6		
								1 I										
0 dBµV							A											
							1				1	1						1
O dBµV																		
01.7	.000 dBuV																	
70 dBµV	.000 ubpv																	
			·					1 I	0	1 54,000	dBµV		-					-
60 dBuV						M1		1										
	water and plan being an	altrip remained	and agent water marker	Automationha	webber with	alwardnathe	underforder	Roapphalaseler										
																		····}·····
50 dBµV									50 dBµV-									-
																[
40 dBμV																		
									re-intrastructure		A town town		an were southing a			in 2	-	
30 dBµV	-				-				40 dBµV									
									+0 uBµV									
20 dBµV			-			-			30 dBµV				-					_
CF 2.3625 GHz			1001	pts			Span	105.0 MHz	CF 2.3625 (Hz	-		1001 p	ts			Sp	an 105.0 MHz
1					Measur	ing .			-	T					Measuri		THE R. LANSING MICH.	444



Channel: High Horizontal

			Averag	-			`
Spectrum 🍸 Spectrum 2 🛛 🛛) Spectrum 3 🛞 Spectrum 4 (x) 🕎	Spectrum	Spectrum 2	Spectrum 3	Spectrum 4	8) (T
	dB 🖷 RBW 1 MHz		Ref Level 60.		6.90 dB 🖶 RBW 1 MHz		
	ms 🖷 YBW 3 MHz 🛛 Mode Auto Sweep		Att	15 dB 🖷 SWT	12 s 👜 YBW 3 kHz	Mode Auto Sweep	
1Pk View			●1Pk View			100202	
	M1[1]	58.84 dBµV 2.513180 GHz				M1[1]	45.30 dBµ 2.501640 GH
110 dBµV	M2[1]	56.50 dBµV 2.483500 GHz				M2[1]	44.75 dBµ 2.483500 GH
00 dBµV		2.463300 GH2				1 1	2.465500 GH
90 dBµV							
10 dBµV							
D1 74.000 dBuV							
0 dBµV							
			D1 5	54.000 dBµV			
0 dBµV M2	M1		••••••				
man the state of the second	خالية ويعقد ومعادي والمعادية	herbisteliters. Ithan Shill boundary man					
50 dBuV							
			50 dBµV-				
O dBuV		t					
					V V		
30 dBuV							
			40 dBµV				
20 dBuV			30 dBµV				
CF 2.5115 GHz	1001 pts	Span 105.0 MHz	CF 2.5115 GHz		1001 p		Span 105.0 MHz
W			GI LIGITO GHE		1001 p		apan 103.0 MHz

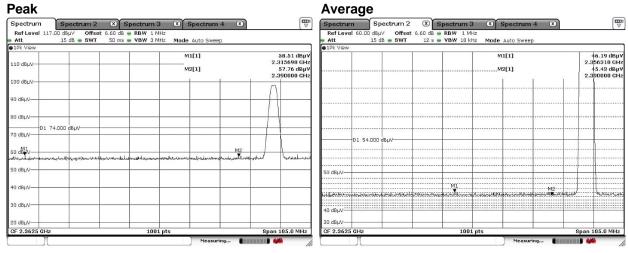
Vertical Peak

Spectrum	Spectrum 2	🛞 Sp	ectrum 3	×	Spectrum	4 ×			Spectrum	ı s
Ref Level 11		et 6.90 dB 👄							Ref Level	
Att 🛛	15 dB 🖷 SWT	40 ms 🖷	YBW 3 MH	iz Mode	Auto Swee	р			Att	15
●1Pk View									●1Pk View	
110 dBµV					1[1] 2[1]		2.513 56.5	17 dBµV 390 GHz 51 dBµV 500 GHz		
100 dBµV										
90 dBµV								-		
80 dBµV										
70 dBµV	74.000 dBµV									01 54.00
60 dBµV	M2			M1						
والمحجم المغال معرومة الهور وأغلته	loved hypersection	colorismenter	con-halotophilatel	Alubaranara	-dramerstrawas	Marsinhaman		international and		
50 dBµV									50 dBµV	
40 dBµV						-				
30 dBuV					-				0.1464/04-042-4	unuu na
50 0000									40 dBµV	
20 dBµV		+ +							30 dBµV	
CF 2.5115 GHz			1001	pts			Span 105	0 MHz	CF 2.5115	GHz

Spectrum	Spectrum 2	Spectrum 3	3 🛞 Spectrur	n4 🗵	l∰
Ref Level 60.0	OdBuV Offset	6.90 dB 曼 RBW 1 MH	z		
Att .	15 dB 🖷 SWT	12 s 🖷 VBW 3 kH	z Mode Auto Swee	эр	
●1Pk View					
2			M1[1]		44.92 dBp1
					2.496710 GH
			M2[1]		44.50 dBµ
					2.483500 GH
			1	1	
CLEEK A Providence	and the second	server as a server	and a second second second	ne hormoneer	
					1
				1	
D1 5	4.000 dBuV				
01 5	1.000 ubuv				
					1
50 dBµV					
	M2	M1.			
5ACT 100000 000000	aar Kaaaaa	nanna Jacan Maraana ar a	eastorn, son apabolic sectors	01011000001-010	annierscologischere street
40 dBµV					
30 dBµV					
CF 2.5115 GHz		100	pts		Span 105.0 MHz



[BT_LE (2Mbps)] Channel: Low Horizontal



Vertical Peak

Spectrum Spectrum 3 Spectrum 4 0 Level 117.00 dBµ/ Offset 6.60 dB RBW 1 MHz 15 dB SWT 50 ms VBW 3 MHz Mode Auto Sweep View View 50 ms VBW 3 MHz Mode Auto Sweep	Spectrum Spectrum 2 (3) Spectrum 3 (3) Spectrum 4 (3)	(The second seco
15 dB 🖷 SWT 50 ms 🖷 YBW 3 MHz Mode Auto Sweep		1.2
	Ref Level 60.00 dBµV Offset 6.60 dB 🖷 RBW 1 MHz	
	Att 15 dB SWT 12 s VBW 10 kHz Mode Auto Sweep	
	e1Pk View	
M1[1] 58.20 de 2.314110 C	M1[1]	46.44 dBµ 2.328090 GH
JBLV 2.314110 C M2[1] 56.90 dE	M2[1]	45.52 dBp
2.390000 0		2.390000 Gi
JBµV-		
n		
βμν-		
BUV-		
D1 74.000 dBµV		
βμν	D1 54.000 dBuV	
W M2 M2		
3μ//	50 dBµV-	
		····
3μν	M1 ••••••••••••••••••••••••••••••••••••	·····
	energian and have been been been and a straight of a straight and a straight and a straight of the	Histon
3µV		
	40 dBµV	
3μV	30 dBµV	
.3625 GHz 1001 pts Span 105.0 Mi	CF 2.3625 GHz 1001 pts	Span 105.0 MHz

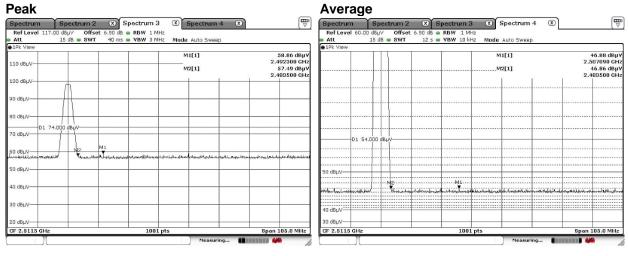


46.70 dBμV 2.546530 GHz 45.91 dBμV 2.483500 GHz

M1-

Span 105.0 MHz

Channel: High Horizontal



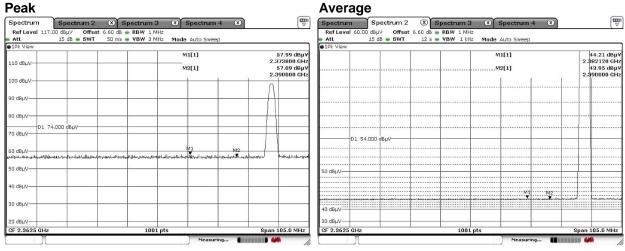
Vertical Peak

	V -			-				6-	<u> </u>	Contraction of the local division of the loc		-	-	<u>(</u>	
Spectrum	Spectrum :		pectrum 3		Spectrun	14 🙁		Spectrur		Spectrum		Spectrum 3		Spectrum 4	4 🗴
Ref Level 117		et 6.90 dB (Ref Leve				■ RBW 1 M			
Att	15 dB 🖷 SW	r 40 ms i	BW 3 MH	z Mod	e Auto Swe	ер		Att	1	5 dB 🖷 SW1	12 9	• VBW 10 k	Hz Mod	e Auto Sweep	
1Pk View								●1Pk View							
				,	M1[1]		58.24 dBµV 2.507720 GHz							M1[1]	
110 dBµV				,	M2[1]		2.507720 GH2 56.74 dBµV							M2[1]	
				,			2.483500 GHz							""TTT	
100 dBµV	-	-	· · ·		1	1								T I	

90 dBµV	m														
	JIN .														
80 dBµV						2									
1922	(1)														
	4.000 dBµV												••••••		
70 dBµV									D1 54.0	n deux				_	
	111		M1												
60 dBµV	142			44.6			and a second second second								
- Detto-of-addressed	THE THREE	March 199 - Carlos Carlos	- postation of the second	erostalista de	and the stand of the stand	Terres and Google	Policie and a failed an								• • • • • • • • • • • • • • • • • • • •
50 dBµV		-			-			50 dBµV-							
								50 0000							
40 dBµV						· ·				N/2					
in any i								distantication	antipat-akar	····· Botcat	handpoologiand	ke-undervisitutedere au	anti-	Antheorem and the second	ntickica accordiant
20 10 11															
30 dBµV								40 dBµV							
								27							
20 dBµV								30 dBµV							
CF 2.5115 GHz		140	1001	pts	27		Span 105.0 MHz	CF 2.5115	GHz		14.5	100	1 pts		



[BT_LE (LongRange S2)] Channel: Low Horizontal



Vertical Peak

Spectrum	Ref Level 60. Att	15 dB 🖷 SWT	Spectrum 3 Spectrum 3 Social and the second s		8	44.21 di 2.378970 (43.89 di 2.390000 (
t 15 db 8 SWT 50 ms 9 VBW 3 MHz Mode Auto Sweep k View db W db W	Att IPk View	15 dB 🖷 SWT	12 s 🖝 VBW 1 kH:	z Mode Auto Sweep M1[1]		2.378970 0 43.89 di
k View K View MI[1] S8.26 dBµV dBµV M2[1] S6.28 dBµ 2.346940 CH; S6.28 dBµ 2.30000 CH; S8.26 dBµV 0.1 74.000 dBµV 0.1 74.000 dBµV	●1Pk View			M1[1]		2.378970 0 43.89 di
dBLV M1[1] 59.26 dBµX dBLV M2[1] 2.396940 0CH dBLV M2[1] 2.390900 0CH dBLV M2[1] 2.390900 CH dBLV M2[1] 2.390900 CH dBLV M2[1] 0.000 CH dBLV M2[1] 0.0000 CH dBLV M2[1] 0.00000 CH dBLV M2[1] 0.00000000000000000000000000000000000						2.378970 0 43.89 di
dBµV						2.378970 0 43.89 di
M2[1] S6.2.9 dipy d6µV 2.390000 CH: //BµV //BµV 01.74.000 dbµV						43.89 dE
dBµV 2.390000 CH:						
авµv- звµv- цаµv- рал 74.000 авµv-						
/был- D1 74.000 dbµл-						
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D1 74.000 dBµV						
D1 74.000 dBµV						
18µV						
	01.5	54.000 dBuV				
	01.	54,000 dbpv				11
18μV M1 M2						
h in the design of the design of the second of the second of the second of the design of the second of						
JBUV	50 dBµV-					
	50 UBH0					
18µV						
				M1	M2	
	*************				X	
JBµV-	40 dBµV					
JBLV	30 dBµV					
2.3625 GHz 1001 pts Span 105.0 MHz	CF 2.3625 GHz	z	1001	pts		Span 105.0 M



Channel: High Horizontal

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Spectrum	Spectrum	2 🛞 Sp	ectrum 3	Spectrum 4	×		Spectrum	n Sp	ectrum 2	🙁 Sr	bectrum 3	× S	pectrum	4 🕱		.
Ref Level 117.			RBW 1 MHz	-				60.00 dBµ'			RBW 1 MHz					
Att	15 dB 🖷 SW	T 40 ms 🖷	VBW 3 MHz	Mode Auto Sweep			Att	15 d	B 🖶 SWT	12 s 🖷	VBW 1 kHz	Mode A	uto Sweep	i.		
1Pk View				Sector Sector Con			●1Pk View									
				M1[1]		58.84 dBµV 2.492410 GHz						M1	[1]			44.68 dBµ\ 522510 GH
110 dBµV				M2[1]		56.50 dBµV							[1]			44.26 dBu
				(INT T		2.483500 GHz							1.1			183500 GH
LOO dBµV				<u> </u>								T.			1	
	小							********		*****	*************	**********			**********	
O dBuV																
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50 dBµV		_					50 dBuV									1
							SU UBHV									
10 dBuV																
0 0000									M2				1			
							Section Concerned	record				www.escoret		******		
30 dBµV							40 dBuV									
							10 appv									
20 dBµV		+ +					30 dBµV							-		
F 2.5115 GHz			1001 pt	5		Span 105.0 MHz	CF 2.5115	GHz			1001 p	its			Span	105.0 MHz
71				Measurin				Y					Measuri			

Vertical Peak

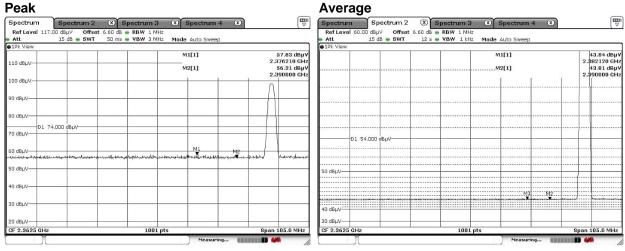
Spectrum	Spectrum 2	🗶 Spe	ctrum 3 🛛 🕱	Spectrum	4 ×		Spectrum			
Ref Level 117 Att	7.00 dBµV Offse 15 dB 🖷 SWT	t 6.90 dB 👄 1 40 ms 🖷 1		de Auto Swee	p		Ref Level 60.0			
1Pk View							1Pk View			
110 dBµV	M1[1					58.87 dBμV 2.539720 GHz 57.28 dBμV 2.483500 GHz				
100 dBµV										
90 dBµV										
80 dBµV										
70 dBµV	74.000 dBµV						01 5			
50 dBµV	M2	henry de de ser	Alter and the later.	na much ture du	M1	howmaniclaterable				
50 dBµV							50 dBµV			
40 dBµV							50 0000			
30 dBµV				-			40 dBµV			
20 dBµV							30 dBµV			
CF 2.5115 GHz			1001 pts			Span 105.0 MHz	CF 2.5115 GHz			

Spectrum	Spectr	um 2	× S	pectrum 3	× ×	Spectrum	4 🗴		[₩
Ref Level 60.0	00 dBµV	Offset 6	.90 dB 👄	RBW 1 MH	z				
Att	15 dB 🖷	SWT	12 s 🖷	VBW 1 kH	z Mode	Auto Sweep			
1Pk View									
2					M	1[1]			44.58 dBµ\
								2.4	93250 GH
					M	2[1]			44.27 dBµ\
									83500 CH
						1			1
				and the second					
									1
					CONTRACTOR STREET				
							*****		1
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01.5	4.000 dBuV-						2		
010									

50 dBµV						1			1
50 UBHV-									
			41						1
	····		-toretor	******		199-01-00-000	***********		
10 10 11									
40 dBµV									
30 dBµV									
30 UBHV									



[BT_LE (LongRange S8)] Channel: Low Horizontal



Vertical Peak

Peak				Average	e			
Spectrum Spectrum 2	Spectrum 3 8 5	pectrum 4 🙁		Spectrum	Spectrum 2 🛞	Spectrum 3	Spectrum 4 (X)	ີ 🖫
Ref Level 117.00 dBµV Offset	6.60 dB 🖷 RBW 1 MHz			Ref Level 60.0	odBµV Offset 6.60 d	B 🖶 RBW 1 MHz		
Att 15 dB 🖷 SWT	50 ms 🖷 VBW 3 MHz 🛛 Mode	Auto Sweep		Att	15 dB 🖷 SWT 12	s 🖶 VBW 1 kHz	Mode Auto Sweep	
1Pk View				●1Pk View				
	м		58.00 dBµV .384080 GHz				M1[1]	44.13 dBµ 2.372360 GH
10 dBµV	M		56.33 dBµV				M2[1]	43.81 dBµ
			.390000 GHz					2.890000 CH
00 dBµV								
) dBµV		^				and a second second	and party constraints from and	
0 dBµV								
D1 74.000 dBuV								1 1
0 dBµV								
			4 I	D1 54	.000 dBµV			
i0 dBµV		M2 M2	1					
Burning and a construction of the second states	and the state of the second	manufampershare the hards of	undurstranshill					
		and the second sec						
0 dBµV				50 dBµV-				
) dBµV								
0 dBµV			-	40 dBuV				
				40 08µV				
0 dBµV			-	30 dBµV				
F 2.3625 GHz	1001 pts	Span	105.0 MHz	CF 2.3625 GHz		1001 pt	s	Span 105.0 MHz
- W		Measuring	141	7				



Channel: High Horizontal

trum Spectrum 2 (3) Spectrum 3 (3) Spectrum 4 (8) Level 117.00 dBµV Offset 6.90 dB	Spectrum				
Level 117.00 dBuy Offset 6.90 dB RBW 1 MHz		Spectrum 2	Spectrum 3	Spectrum 4	∞ 🖫
	Ref Level 60.0		6.90 dB 🖷 RBW 1 MHz		
15 dB 🖷 SWT 40 ms 🖷 YBW 3 MHz Mode Auto Sweep	e Att	15 dB 🖷 SWT	12 s 🖷 YBW 1 kHz	Mode Auto Sweep	
View	e1Pk View				
M1[1] 58.93 2.50751				M1[1]	44.80 dBµ 2.513910 GH
2,50751 BµV M2[1] 56.81 2,40355	dBµV			M2[1]	44.44 dBµ 2.483500 GH
N					
01 7+.000 dbuV					
		4.000 dBµV			
N M2 M1					
nionalitanosement Waterenerikining and a state and a	leadedbar				
N	50 dBµV				
N					
	chadman and the	Me Me		₩1. ▼	
N-	40 dBµV				
N	30 dBµV	-			
5115 GHz 1001 pts Span 105.0	MHz CF 2.5115 GHz		1001 p	its	Span 105.0 MHz

Vertical Peak

Spectrum	Spectrum 2	Spectrum	3 🕱	Spectrum 4			₩ S	pectrum
Ref Level 117 Att	.00 dBµV Offsel 15 dB - SWT	6.90 dB 👄 RBW 1 40 ms 🖷 VBW 3		Auto Sweep				Ref Level 60. Att
1Pk View							•	1Pk View
110 dBµV				11[1]		2.51643	dBµV	
100 dBµV								
90 dBµV								
80 dBµV								
70 dBµV	4.000 dBµV							D1 1
60 dBµV	M2	فاعتوا المعراط الإدماد المعتولة والمعاركة	M1	المعاجد بمصدر بالدالة	hikos ik akasint	المتلفظ والمحاط		
50 dBµV								0 dBµV
40 dBµV								
121-101201022-10								
30 dBµV							4	0 dBµV
20 dBµV								O dBµV
CF 2.5115 GHz		10	01 pts			Span 105.0	MHz	F 2.5115 GHz

Spectrum	Spectrum 2	Spectrum 3	× S	pectrum 4	L (X)		
Ref Level 60.		6.90 dB 👄 RBW 1 MHz					
Att	15 dB 📟 SWT	12 s 🖷 VBW 1 kHz	Mode A	uto Sweep			
1Pk View							
1			M1	[1]			44.70 dBµ\
			140	643			01950 GHz 44.26 dBµV
	+		M2	[1]			44.26 UBP
			- î	1			

D1 5	54.000 dBµV						
50 dBµV							
	and Me						
40 dBµV							
30 dBµV	-						
CF 2.5115 GHz		1001					105.0 MHz



4.7 Transmitter Power Spectral Density

4.7.1 Measurement procedure

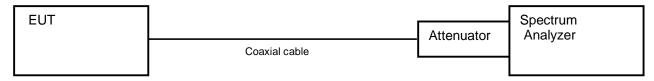
[FCC 15.247(e), KDB558074 D01 v05r02]

The peak power is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;

- a) Span = 1.5 times the 6 dB bandwidth.
- b) RBW = 3kHz 100kHz.
- c) VBW ≥ 3 x RBW.
- d) Sweep time = auto-couple.
- e) Detector = peak.
- f) Trace mode = max hold.

- Test configuration



4.7.2 Limit

The peak power spectral density shall not be greater than 8dBm in any 3kHz band.



4.7.3 Measurement result

Date Temperature	:	18-October-2022 21.4 [°C]			
Humidity	÷	47.0 [%]	Test engineer	:	
Test place	:	Shielded room No.4	i eet engineer	-	Kazunori Saito

[BT_LE (1Mbps)]

Channel	Center Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dBm)	Result
Low	2402	-21.61	10.93	-10.68	8.00	18.68	PASS
Middle	2440	-20.38	10.93	-9.45	8.00	17.45	PASS
High	2480	-20.88	10.93	-9.95	8.00	17.95	PASS

*: Tested by EB1146

[BT_LE (2Mbps)]

Channel	Center Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dBm)	Result
Low	2402	-23.77	10.93	-12.84	8.00	20.84	PASS
Middle	2440	-22.57	10.93	-11.64	8.00	19.64	PASS
High	2480	-23.05	10.93	-12.12	8.00	20.12	PASS

*: Tested by EB1146

[BT_LE (LongRange S2)]

Channel	Center Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dBm)	Result
Low	2402	-12.96	10.93	-2.03	8.00	10.03	PASS
Middle	2440	-11.74	10.93	-0.81	8.00	8.81	PASS
High	2480	-12.26	10.93	-1.33	8.00	9.33	PASS

*: Tested by EB1146

[BT_LE (LongRange S8)]

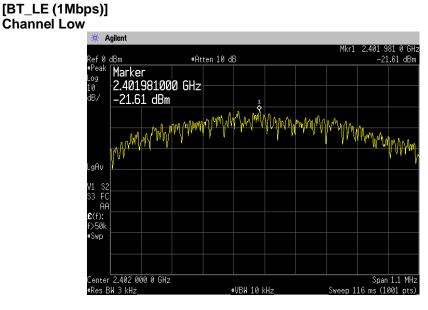
Channel	Center Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dBm)	Result
Low	2402	-12.92	10.93	-1.99	8.00	9.99	PASS
Middle	2440	-11.70	10.93	-0.77	8.00	8.77	PASS
High	2480	-12.23	10.93	-1.30	8.00	9.30	PASS

*: Tested by EB1146

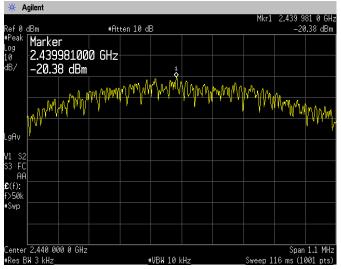
Calculation;

Transmitter Power Spectral Density Level (Margin) = Limit – (Reading + Factor)

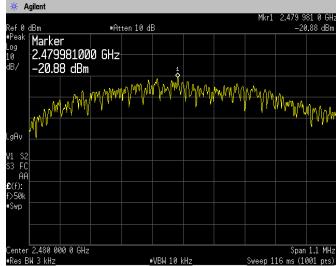
4.7.4 Trace data



Channel Middle

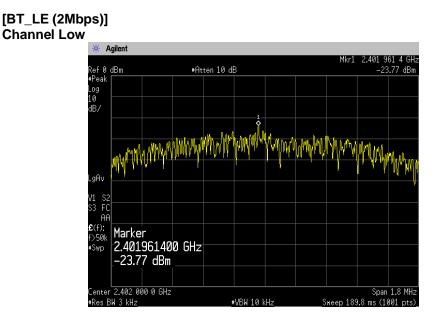


Channel High

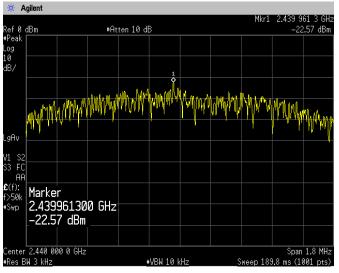


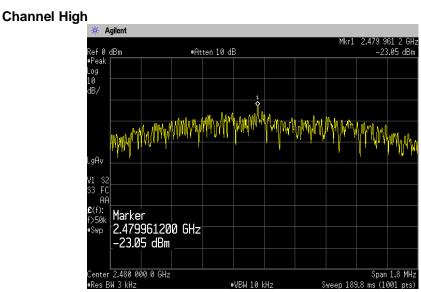




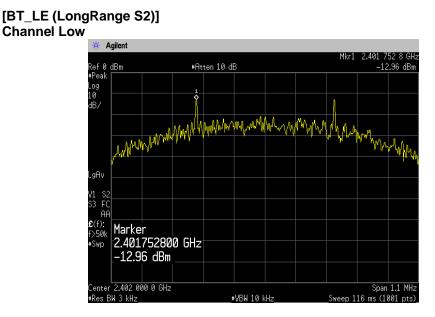




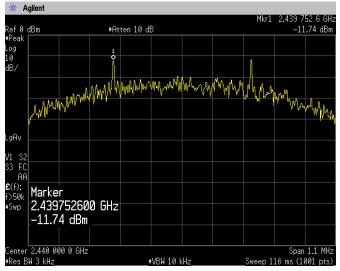


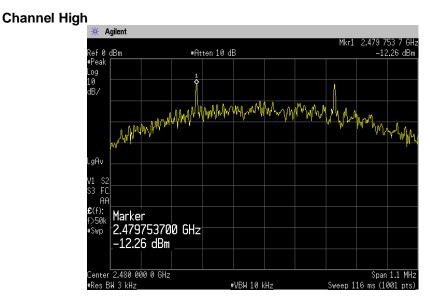




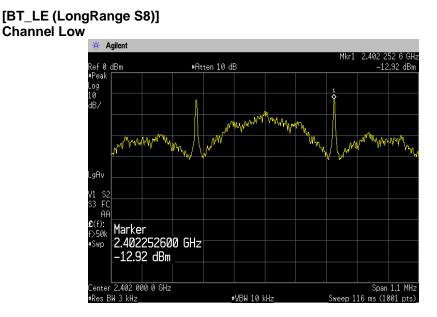


Channel Middle

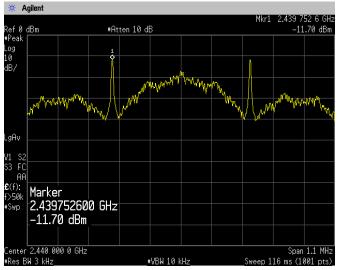


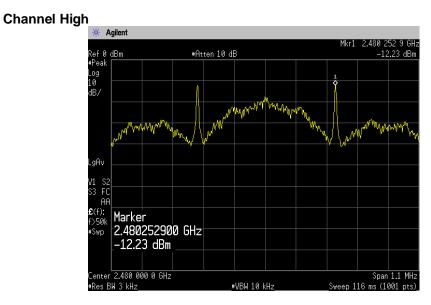














4.8 AC Power Line Conducted Emissions

4.8.1 Measurement procedure

[FCC 15.207]

Test was applied by following conditions.

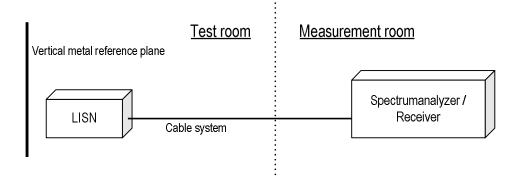
Test method Frequency range Test place EUT was placed on Vertical Metal Reference Plane Test receiver setting	:	ANSI C63.10 0.15 MHz to 30 MHz 3 m Semi-anechoic chamber Styrofoam table / (W)1.0m × (D)0.8m × (H)0.8m (W)2.0 m × (H)2.0 m 0.4 m away from EUT
- Detector - Bandwidth		Quasi-peak, Average 9 kHz

EUT and peripherals are connected to $50\Omega/50\mu$ H Line Impedance Stabilization Network (LISN) which are connected to reference ground plane, and are placed 80cm away from EUT. Excess of AC power cable is bundled in center.

LISN for peripheral is terminated in 50Ω .

EUT operating mode is selected to emit the maximum noise. Overall frequency range is investigated with spectrum analyzer using peak detector. Maximum emission configuration is determined by manipulating the EUT, peripherals, interconnecting cables. Then, emission measurements are performed with test receiver in above setting to each current-carrying conductor of the mains port. Sufficient time for EUT, peripherals and test equipment is provided in order for them to warm up to their normal operating condition. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits.

- Test configuration





4.8.2 Calculation method

Emission level = Reading + (LISN. Factor + Cable system loss) Margin = Limit – Emission level

Example:

Limit @ 6.770 MHz: $60.0 dB\mu V(Quasi-peak)$: $50.0 dB\mu V(Average)$ (Quasi peak) Reading = $41.2 dB\mu V$ c.f = 10.3 dBEmission level = $41.2 + 10.3 = 51.5 dB\mu V$ Margin = 60.0 - 51.5 = 8.5 dB(Average) Reading = $35.0 dB\mu V$ c.f = 10.3 dBEmission level = $35.0 + 10.3 = 45.3 dB\mu V$ Margin = 50.0 - 45.3 = 4.7 dB

4.8.3 Limit

Frequency	Li	mit
[MHz]	QP [dBuV]	AV [dBuV]
0.15-0.5	66-56*	56-46*
0.5-5	56	46
5-30	60	50

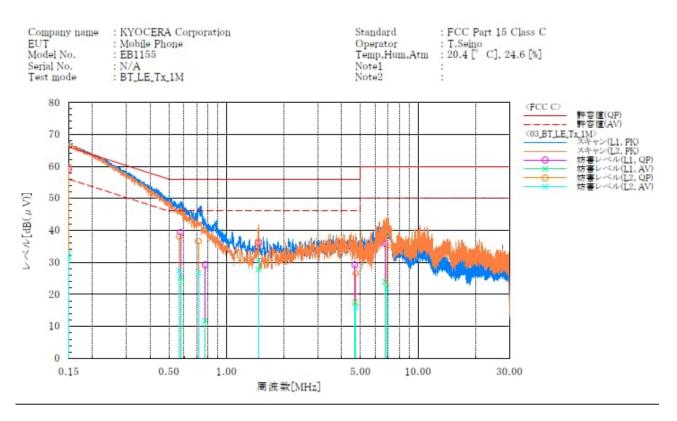
*: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.



4.8.4 Test data

Date : Temperature : Humidity : Test place :	9-December-2022 20.4 [°C] 24.6 [%] 3m Semi-anechoic chamber	Test engineer	: Tadahiro Seino
Test place .			

[BT_LE]



_			-	
Ŧ	1118	11	Res	ult.
٠	****	•	W. or Co.	

	L1									N	
No.	Frequency		Reading	c. f	Result	Result	Limit	Limit	Margin		Remark
		QP	AV		QP .	AV	QP	AV	QP	AV	
	[MH=]	$[dB(\mu V)]$	$[dB(\mu V)]$	[dB]	$[dB(\mu V)]$	$[dB(\mu V)]$	$[dB(\mu V)]$	$[dB(\mu V)]$	[dB]	[dB]	
1	0.150		20.7	10.6	59.2	31.3	66.0	56.0	6.8	24.7	
2	0.577		14.8	10.4	39.4	25.2	56.0	46.0	16.6	20.8	
3	0.774		1.4	10.4	29.2	11.8	56.0		26.8	34.2	
4	1.472		17.2	10.5	36.0	27. 7	56.0	46.0	20.0	18.3	
5	4.693		6.9			17.6	56.0		26.8	28.4	
6				10.7							
0	6,766	24.9	13.0	10.9	35.8	23.9	60. 0	50.0	24.2	26.1	
	L2										
No.	Frequency		AV	c.f	Result QP	AV	QP	Limit AV	Margin QP	Margin AV	Remark
	[MHz]		[dB(µV)]	[dB]	$[dB(\mu V)]$	LdB(u V)]		$[dB(\mu V)]$		[dB]	
1	0.150	49.3	22. 2	10.6	59, 9	32.8	[dB(µV)] 66.0	56.0	6.1	23.2	
2											
	0 560	. 27 6	17.0	10.4	38 0	27.4	56 0	46 0	18 0	19.6	
	0.569		17.0	10.4	38.0	27.4		46.0	18.0	18.6	
3	0.713	26, 2	16.3	10.4	36, 6	26, 7	56.0	46.0	19.4	19.3	
3	0,713	26.2	16.3 20.1	10.4 10.5	36, 6	26, 7 30, 6	56.0 56.0	46.0	19.4 19.5	19.3 15.4	
3	0.713	26, 2	16.3	10.4	36, 6	26, 7	56.0	46.0	19.4	19.3	
3	0,713	26.2	16.3 20.1	10.4 10.5	36, 6	26, 7 30, 6	56.0 56.0	46.0	19.4 19.5	19.3 15.4	



5 Antenna requirement

According to FCC section 15.203, an intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device. The antenna is a special antenna mounted inside of the EUT. Therefore, the EUT complies with the antenna requirement of FCC section 15.203.



6 Measurement Uncertainty

Expanded uncertainties stated are calculated with a coverage Factor k=2. Please note that these results are not taken into account when measurement uncertainty considerations contained in ETSI TR 100 028 Parts 1 and 2 determining compliance or non-compliance with test result.

Test item	Measurement uncertainty
Conducted emission, AMN (9 kHz – 150 kHz)	±3.7 dB
Conducted emission, AMN (150 kHz – 30 MHz)	±3.3 dB
Radiated emission (9kHz – 30 MHz)	±3.2 dB
Radiated emission (30 MHz – 1000 MHz)	±5.5 dB
Radiated emission (1 GHz – 6 GHz)	±5.0 dB
Radiated emission (6 GHz – 18 GHz)	±4.6 dB
Radiated emission (18 GHz – 40 GHz)	±6.4 dB
Radio Frequency	±1.3 * 10 ⁻⁸
RF power, conducted	±0.7 dB
Adjacent channel power	±1.5 dB
Temperature	±0.6 °C
Humidity	±1.2 %
Voltage (DC)	±0.4 %
Voltage (AC, <10kHz)	±0.2 %

Measured value and standard limit value					
Case1	Imit value +Uncertainty -Uncertainty Even if it takes uncertainty into consideration, Measured value a standard limit value is fulfilled. Although measured value is in a standard limit value, a limit value won't be fulfilled if uncertainty is taken into consideration.				
Case3	Although measured value exceeds a standard limit value, a limit value will be fulfilled if uncertainty is taken into consideration. Even if it takes uncertainty into consideration,				
	Case1				



7 Laboratory Information

Testing was performed and the report was issued at:

TÜV SÜD Japan Ltd. Yonezawa Testing Center

Address: 5-4149-7 Hachimanpara, Yonezawa-shi, Yamagata, 992-1128 Japan Phone: +81-238-28-2881

Accreditation and Registration A2LA

Certificate #3686.03

VLAC Accreditation No.: VLAC-013

BSMI Laboratory Code: SL2-IN-E-6018, SL2-A1-E-6018

Innovation, Science and Economic Development Canada ISED#: 4224A

VCCI Council Registration number: A-0166



Appendix A. Test Equipment

Radiated emission

Equipment	Company	Model No.	Serial No.	Cal. Due	Cal. Date
EMI Receiver	ROHDE&SCHWARZ	ESCI	100765	30-Sep-2023	14-Sep-2022
EMI receiver	ROHDE&SCHWARZ	ESW44	103171	30-Sep-2023	20-Sep-2022
Spectrum analyzer	Agilent Technologies	E4440A	US44302655	30-Sep-2023	05-Sep-2022
Spectrum analyzer	ROHDE&SCHWARZ	FSV40	101731	31-Jul-2023	19-Jul-2022
Preamplifier	SONOMA	310	372170	30-Sep-2023	28-Sep-2022
Loop antenna	ROHDE&SCHWARZ	HFH2-Z2	100515	30-Apr-2023	18-Apr-2022
Attenuator	TOYO Connector	NA-PJ-6	N/A(S507)	28-Feb-2023	03-Feb-2022
Biconical antenna	Schwarzbeck	VHBB9124/BBA9106	1145	30-Jun-2023	28-Jun-2022
Log periodic antenna	Schwarzbeck	VUSLP9111B	345	30-Nov-2022	08-Nov-2021
			346	30-Nov-2023	16-Nov-2022
Attenuator	TOYO Connector	NA-PJ-6/6dB	N/A(S541)	30-Sep-2023	28-Sep-2022
Attenuator	TAMAGAWA.ELEC	CFA-10/3dB	N/A(S503)	31-Jul-2023	14-Jul-2022
Preamplifier	TSJ	MLA-100M18-B02-40	1929118	31-Dec-2022	22-Dec-2021
Attenuator	AEROFLEX	26A-10	081217-08	31-Dec-2022	22-Dec-2021
Double ridged guide antenna	ETS LINDGREN	3117	00052315	30-Jun-2023	22-Jun-2022
Attenuator	HUBER+SUHNER	6803.17.B	N/A(2340)	31-Dec-2022	23-Dec-2021
Double ridged guide antenna	A.H.Systems Inc.	SAS-574	469	31-Aug-2023	19-Aug-2022
Preamplifier	TSJ	MLA-1840-B03-35	1240332	31-Aug-2023	19-Aug-2022
Notch Filter	Micro-Tronics	BRM50702	G433	30-Sep-2023	28-Sep-2022
Microwave cable	HUBER+SUHNER	SUCOFLEX104/9m	MY30037/4	31-Dec-2022	22-Dec-2021
		SUCOFLEX104/1m	my24610/4	31-Dec-2022	22-Dec-2021
		SUCOFLEX104/8m	SN MY30033/4	31-Dec-2022	22-Dec-2021
		SUCOFLEX104/1m	MY32976/4	31-Dec-2022	22-Dec-2021
		SUCOFLEX104/2m	SN MY28404/4	31-Dec-2022	22-Dec-2021
		SUCOFLEX104/7m	41625/6	31-Dec-2022	22-Dec-2021
PC	DELL	DIMENSION E521	75465BX	N/A	N/A
Software	TOYO Corporation	EP5/RE-AJ	0611193/V6.0.140	N/A	N/A
PC	DELL	OPTIPLEX9010	00186-228-073-851	N/A	N/A
Software	TOYO Technica	ES10/RE-AJ	Ver.2021.10.001	N/A	N/A
Absorber	RIKEN	PFP30	N/A	N/A	N/A
3m Semi an-echoic Chamber	TOKIN	N/A	N/A(9002-NSA)	31-May-2023	28-May-2022
3m Semi an-echoic Chamber	TOKIN	N/A	N/A(9002-SVSWR)	31-May-2023	28-May-2022

Conducted emission at mains port

Equipment	Company	Model No.	Serial No.	Cal. Due	Cal. Date
EMI receiver	ROHDE&SCHWARZ	ESW44	103171	30-Sep-2023	20-Sep-2022
Attenuator	HUBER+SUHNER	6810.01.A	N/A (S411)	31-Dec-2022	22-Dec-2021
Line impedance stabilization network	Kyoritsu Electrical Works, Ltd.	TNW-407F2	12-17-110-2	30-Jun-2023	15-Jun-2022
Microwave cable	HUBER+SUHNER	SUCOFLEX104/5m	MY33601/4	31-Oct-2023	27-Oct-2022
Microwave cable	HUBER+SUHNER	SUCOFLEX104/2m	MY37268/4	31-Oct-2023	27-Oct-2022
Coaxial cable	HUBER+SUHNER	RG214/U/10m	N/A (S194)	31-Dec-2022	22-Dec-2021
PC	DELL	OPTIPLEX9010	00186-228-073-851	N/A	N/A
Software	TOYO Technica	ES10/RE-AJ	Ver.2021.10.001	N/A	N/A

*: The calibrations of the above equipment are traceable to NIST or equivalent standards of the reference organizations.