



RADIO TEST REPORT

Test Report No. : 10636726H-F-R3

Applicant : **Panasonic Mobile Communications Development of Europe Ltd**

Type of Equipment : **Digital Camera**

Model No. : **DMC-CM1**

Test regulation : **FCC Part 27 Subpart C: 2014**

FCC ID : **UCE314062A**

Test Result : **Complied**

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with above regulation.
4. The test results in this report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
6. This test report covers Radio technical requirements. It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
7. This report is a revised version of 10636726H-F-R2. 10636726H-F-R2 is replaced with this report.

Date of test: January 15 to March 17, 2015

Representative test engineer:


Yutaka Yoshida
Engineer
Consumer Technology Division

Approved by:


Takahiro Hatakeda
Leader
Consumer Technology Division



NVLAP LAB CODE: 200572-0

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UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

13-EM-F0429

CONTENTS	PAGE
SECTION 1: Customer information	4
SECTION 2: Equipment under test (E.U.T.)	4
SECTION 3: Test specification, procedures & results	6
SECTION 4: Operation of E.U.T. during testing.....	9
SECTION 5: RF Output Power (Conducted/Radiated).....	23
SECTION 6: Bandwidth (Conducted)	24
SECTION 7: Spurious Emission and Band-Edge (Conducted/Radiated)	24
SECTION 8: Frequency Stability(Temperature/Voltage Variation)	25
APPENDIX 1: Data of EMI test	26
RF Output Power (Conducted).....	26
RF Output Power (Radiated).....	39
Peak to Average power Ratio (Conducted)	52
Bandwidth(Conducted)	73
Band-Edge(Conducted)	81
Band Edge (Radiated).....	114
Spurious Emission (Radiated)	146
Frequency Stability(Temperature/Voltage Variation)	150
APPENDIX 2: Test instruments	157
APPENDIX 3: Photographs of test setup.....	159
Radiated Spurious Emission	159
Worst Case Position	160

SECTION 1: Customer information

Company Name : Panasonic Mobile Communications Development of Europe Ltd
Address : Willoughby Road, Bracknell Berkshire RG12 8FP, UK
Telephone Number : +44 (0) 1344 706774
Facsimile Number : +44 (0) 1344 706796
Contact Person : Andrew James

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment : Digital Camera
Model No. : DMC-CM1
Serial No. : Refer to Section 4, Clause 4.2
Rating : AC120V/60Hz (AC Adaptor)
DC3.8V (Battery)
Receipt Date of Sample : January 7, 2015
Country of Mass-production : China
Condition of EUT : Production prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT : No Modification by the test lab

2.2 Product Description

General Specification

Power Supply (radio part input) : Cellular PA: 3.0V-4.2V (Depend on Battery voltage)
Cellular other RF part: 1.3V, 1.8V, 2.05V, 2.7V (Regulated voltage)
WLAN 5GHz Front-end module: 3.0V-4.2V (Depend on Battery voltage)
WLAN/BT other RF part: 1.3V, 1.8V, 3.0V (Regulated voltage)
Clock frequency(ies) in the system : 2.26GHz (Max)
See below table for other clock frequencies

Frequency	Device
32.768kHz	MSM8974AB
32.768kHz (X'tal)	BUYD2206
27.0MHz	TC358764AXBG, XO2-256-64UCBGA, BUYD2206
48.0MHz (X'tal)	WCN3680
24.0MHz	MSM8974AB, Sub Camera
19.2MHz	WTR1625L, MSM8974AB
19.2MHz (X'tal)	PM8941
9.6MHz	WCD9320
72MHz	Main Camera
27.12MHz	NFC IC

Hardware / Software version : Rev. PR / QRCT Version 3.0.32.0

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4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Radio Specification

	IEEE802.11b	IEEE802.11g/n (20 M band)	IEEE802.11a/n/ac (20 M band)	IEEE802.11n/ac (40 M band)	IEEE802.11ac (80 M band)
Frequency of operation	2412-2462MHz	2412-2462MHz	5180-5240MHz 5260-5320MHz 5500-5700MHz 5745-5825MHz	5190-5230MHz 5270-5310MHz 5510-5670MHz 5755-5795MHz	5210MHz 5290MHz 5530-5610MHz 5775MHz
Type of modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK)		OFDM (64QAM, 16QAM, QPSK, BPSK, 256QAM)
Channel spacing	5MHz		20MHz	40MHz	80MHz
Antenna type	Monopole				
Antenna Connector type	Spring type				
Antenna Gain	2.4GHz: -5.40dBi W52: -3.0dBi, W53: -3.5dBi, W56: -1.5dBi, W58: -1.8dBi				

	Bluetooth Ver.4.0 with EDR function	GSM	W-CDMA	LTE
Frequency of operation	2402-2480MHz	[Up Link] GSM850: 824 – 849MHz PCS: 1850 – 1910MHz [Down Link] GSM850: 869 – 894MHz PCS: 1930 – 1990MHz	[Up Link] Band II: 1850 – 1910MHz Band IV: 1710 – 1755MHz Band V: 824 – 849MHz [Down Link] Band II: 1930 – 1990MHz Band IV: 2110 – 2155MHz Band V: 869 – 894MHz	[Up Link] Band II: 1850 – 1910MHz Band IV: 1710 – 1755MHz Band V: 824 – 849MHz Band VII: 2500 – 2570MHz Band X VII: 704 – 716MHz [Down Link] Band II: 1930 – 1990MHz Band IV: 2110 – 2155MHz Band V: 869 – 894MHz Band VII: 2620 – 2690MHz Band X VII: 734 – 746MHz
Type of modulation	BT: FHSS (GFSK, $\pi/4$ -DQPSK, 8-DPSK) LE: GFSK	GMSK, 8PSK	QPSK	QPSK, 16QAM
Channel spacing	BT: 1MHz LE: 2MHz	200kHz	200kHz	100kHz
Antenna type	Monopole	Monopole	Main: Monopole Sub: Monopole	
Antenna Connector type	Spring type	Spring type	Main: Spring type Sub: Spring type	
Antenna Gain	-5.40dBi	GSM850: -0.9dBi PCS: 0.5dBi	Band II: 0.5dBi Band IV: 0.6dBi Band V: -0.9dBi	Band II: 0.5dBi Band IV: 0.6dBi Band V: -0.9dBi Band VII: -0.2dBi Band X VII: -1.5dBi

	NFC	GPS/GLONASS
Frequency of operation	13.56MHz	GPS: 1575.42MHz GLONASS: 1597.55-1605.89MHz
Type of modulation	ASK	GPS: BPSK GLONASS: BPSK
Channel spacing	-	GLONASS: 0.5625MHz
Antenna type	Loop	Monopole
Antenna Connector type	Spring type	Spring type
Antenna Gain	N/A	-2.9dBi

*This test report applies for W-CDMA (Band IV), and LTE (Band IV, VII, X VII).

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 27 Subpart C: 2014, final revised on August 15, 2014

Title : FCC 47CFR Part 27 Subpart C Technical Standards
MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

3.2 Procedures and results

Item	Test Specification & Procedure	Remarks	Deviation	Worst margin	Results
RF Output Power(Conducted/ Radiated) (Conducted Output Power / Equivalent isotropic radiated power(EIRP) / Effective Radiated Power(ERP))	FCC 2.1046 FCC 27.50	Conducted/ Radiated	N/A	-	Complied
Peak to Average power Ratio	FCC 27.50	Conducted	N/A	-	Complied
Emission Bandwidth, 99% Occupied Bandwidth	FCC 2.1049 FCC 27.53(h)(3) FCC 27.53(m)(6)	Conducted	N/A	-	Complied
Band-Edge	FCC 2.1051 FCC 2.1053 FCC 27.53	Conducted/ Radiated	N/A	W-CDMA [Conducted] 16.32dB 1709.975MHz [Radiated] 2.5dB 1755.00MHz, Vertical LTE [Conducted] 1.59dB 2500.00MHz [Radiated] 2.9dB 1755.00MHz, Vertical	Complied
Spurious Emission(Conducted)	FCC 2.1051 FCC 27.53	Conducted	N/A	-	Complied
Spurious Emission(Radiated)	FCC 2.1053 FCC 27.53	Radiated	N/A	W-CDMA 17.4dB 3465.20MHz, Vertical LTE 4.1dB 5130.00MHz, Horizontal	Complied
Frequency Stability (Temperature Variation/ Voltage Variation)	FCC 2.1055 FCC 27.54	Conducted	N/A	-	Complied

Note: UL Japan's EMI Work Procedures No. 13-EM-W0420

*These tests were also referred to ANSI/TIA 603-C-2004 "Land Mobile FM or PM Communications Equipment Measurement and Performance Standards."

*These tests were also referred to KDB 971168 D01 "Power Meas License Digital Systems v02r02"

*These tests were performed without any deviations from test procedure except for additions or exclusions.

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

3.3 Uncertainty

EMI

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

Radiated Emission (EUT height: 0.8m) (±dB)	
Measurement Distance 3m	
30MHz-300MHz	5.5dB
300MHz-1000MHz	4.2dB
1GHz-12.75GHz	4.6dB
Measurement Distance 1m	
1GHz-18GHz	5.3dB
15GHz-26.5GHz	3.7dB
26.5GHz-40GHz	3.7dB

Power meter (±dB)	
Below 1GHz	Above 1GHz
0.7dB	1.5dB

Antenna terminal conducted emission and Power density (±dB)			Antenna terminal conducted emission (±dB)		Channel power (±dB)
Below 1GHz	1GHz-3GHz	3GHz-18GHz	18GHz-26.5GHz	26.5GHz-40GHz	
1.5dB	1.7dB	2.8dB	2.8dB	2.9dB	2.6dB

Antenna Terminal Conducted emission test

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

Radiated emission test(3m)

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

3.4 Test Location

UL Japan, Inc. Ise EMC Lab. *NVLAP Lab. code: 200572-0
 4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
 Telephone : +81 596 24 8999 Facsimile : +81 596 24 8124

	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	2973C-1	19.2 x 11.2 x 7.7m	7.0 x 6.0m	No.1 Power source room
No.2 semi-anechoic chamber	2973C-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	2973C-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.3 Preparation room
No.3 shielded room	-	4.0 x 6.0 x 2.7m	N/A	-
No.4 semi-anechoic chamber	2973C-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.4 Preparation room
No.4 shielded room	-	4.0 x 6.0 x 2.7m	N/A	-
No.5 semi-anechoic chamber	-	6.0 x 6.0 x 3.9m	6.0 x 6.0m	-
No.6 shielded room	-	4.0 x 4.5 x 2.7m	4.0 x 4.5 m	-
No.6 measurement room	-	4.75 x 5.4 x 3.0m	4.75 x 4.15 m	-
No.7 shielded room	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.8 measurement room	-	3.1 x 5.0 x 2.7m	N/A	-
No.9 measurement room	-	8.8 x 4.6 x 2.8m	2.4 x 2.4m	-
No.11 measurement room	-	6.2 x 4.7 x 3.0m	4.8 x 4.6m	-

* Size of vertical conducting plane (for Conducted Emission test): 2.0 x 2.0m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

3.5 Test set up, Test instruments and Data of EMI

Refer to APPENDIX.

SECTION 4: Operation of E.U.T. during testing

4.1 Operating Modes

<W-CDMA Band IV>

Test	Operating mode	Power Control	Tested frequency	Uplink Channel
RF output Power(Conducted)	Transmitting (Tx) W-CDMA (RMC12.2kbps) Transmitting (Tx) W-CDMA (HSDPA Subtest 1-4) Transmitting (Tx) W-CDMA (DC-HSDPA Subtest 1-4) Transmitting (Tx) W-CDMA (HSUPA Subtest 1-5) Transmitting (Tx) W-CDMA (HSPA+ (16QAM) Subtest 1)	See Section 4.1.1	1712.4 MHz 1732.6 MHz 1752.6 MHz	1312 1413 1513
RF output Power (Radiated), Spurious Emission (Conducted/Radiated), Peak to Average power Ratio (Conducted)	Transmitting (Tx) W-CDMA (RMC12.2kbps)	TPC All Up bits(Max)	1712.4 MHz 1732.6 MHz 1752.6 MHz	1312 1413 1513
Band Edge (Conducted/Radiated)	Transmitting (Tx) W-CDMA (RMC12.2kbps)	TPC All Up bits(Max)	1712.4 MHz 1752.6 MHz	1312 1513
Emission Bandwidth, 99% Occupied bandwidth, Frequency Stability (Temperature/Voltage Variation)	Transmitting (Tx) W-CDMA (RMC12.2kbps)	TPC all up bits (MAX)	1732.6 MHz	1413

*The W-CDMA, HSDPA, HSUPA, HSPA+ (16QAM), and DC-HSDPA modes of EUT were verified on each channel and "sub-tests" according to section 4.1.1.

(Also refer to Release-6 procedures in section 5.2 of 3GPP TS 34.121.)

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

<LTE Band IV> 1/3

Test	Modulation	Bandwidth	UL RB Config.	Power Control	Tested frequency[MHz]	Uplink Channel
RF Output Power (Conducted)	QPSK 16QAM	20MHz	1/0	TPC All 1(MAX)	1720.0	20050 Low
			1/49		1732.5	20175 Mid
			1/99		1745.0	20300 High
			50/0			
			50/24			
			50/49			
			100/0			
		15MHz	1/0	TPC All 1(MAX)	1717.5	20025 Low
			1/37		1732.5	20175 Mid
			1/74		1747.5	20325 High
			36/0			
			36/19			
			36/39			
			75/0			
		10MHz	1/0	TPC All 1(MAX)	1715.0	20000 Low
			1/24		1732.5	20175 Mid
			1/49		1750.0	20350 High
			25/0			
			25/12			
			25/24			
			50/0			
		5MHz	1/0	TPC All 1(MAX)	1712.5	19975 Low
			1/12		1732.5	20175 Mid
			1/24		1752.5	20375 High
			12/0			
			12/6			
			12/11			
			25/0			
		3MHz	1/0	TPC All 1(MAX)	1711.5	19965 Low
			1/7		1732.5	20175 Mid
			1/14		1753.5	20385 High
			8/0			
			8/4			
			8/7			
			15/0			
		1.4MHz	1/0	TPC All 1(MAX)	1710.7	19957 Low
			1/2		1732.5	20175 Mid
			1/5		1754.3	20393 High
			3/0			
			3/1			
			3/3			
			6/0			

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

<LTE Band IV> 2/3

Test	Modulation	Bandwidth	UL RB Config.	Power Control	Tested frequency[MHz]	Uplink Channel
RF Output Power(Radiated) (Equivalent Isotropic Radiated Power(EIRP))	QPSK	20MHz	1/99 *1)	TPC All 1(MAX)	1720.0	20050 Low
			1/99 *1)	TPC All 1(MAX)	1732.5	20175 Mid
			1/49 *1)	TPC All 1(MAX)	1745.0	20300 High
		15MHz	1/0 *1)	TPC All 1(MAX)	1717.5	20025 Low
			1/74 *1)	TPC All 1(MAX)	1732.5	20175 Mid
			1/0 *1)	TPC All 1(MAX)	1747.5	20325 High
		10MHz	1/49 *1)	TPC All 1(MAX)	1715.0	20000 Low
			1/49 *1)	TPC All 1(MAX)	1732.5	20175 Mid
			1/24 *1)	TPC All 1(MAX)	1750.0	20350 High
		5MHz	1/12 *1)	TPC All 1(MAX)	1712.5	19975 Low
			1/24 *1)	TPC All 1(MAX)	1732.5	20175 Mid
			1/12 *1)	TPC All 1(MAX)	1752.5	20375 High
		3MHz	1/14 *1)	TPC All 1(MAX)	1711.5	19965 Low
			1/14 *1)	TPC All 1(MAX)	1732.5	20175 Mid
			1/0 *1)	TPC All 1(MAX)	1753.5	20385 High
		1.4MHz	1/0 *1)	TPC All 1(MAX)	1710.7	19957 Low
			1/0 *1)	TPC All 1(MAX)	1732.5	20175 Mid
			1/0 *1)	TPC All 1(MAX)	1754.3	20393 High
	16QAM	20MHz	1/99 *1)	TPC All 1(MAX)	1720.0	20050 Low
			1/0 *1)	TPC All 1(MAX)	1732.5	20175 Mid
			1/49 *1)	TPC All 1(MAX)	1745.0	20300 High
		15MHz	1/37 *1)	TPC All 1(MAX)	1717.5	20025 Low
			1/0 *1)	TPC All 1(MAX)	1732.5	20175 Mid
			1/74 *1)	TPC All 1(MAX)	1747.5	20325 High
		10MHz	1/49 *1)	TPC All 1(MAX)	1715.0	20000 Low
			1/0 *1)	TPC All 1(MAX)	1732.5	20175 Mid
			1/0 *1)	TPC All 1(MAX)	1750.0	20350 High
		5MHz	1/0 *1)	TPC All 1(MAX)	1712.5	19975 Low
			1/24 *1)	TPC All 1(MAX)	1732.5	20175 Mid
			1/12 *1)	TPC All 1(MAX)	1752.5	20375 High
		3MHz	1/0 *1)	TPC All 1(MAX)	1711.5	19965 Low
			1/14 *1)	TPC All 1(MAX)	1732.5	20175 Mid
			1/0 *1)	TPC All 1(MAX)	1753.5	20385 High
		1.4MHz	1/0 *1)	TPC All 1(MAX)	1710.7	19957 Low
			1/5 *1)	TPC All 1(MAX)	1732.5	20175 Mid
			1/0 *1)	TPC All 1(MAX)	1754.3	20393 High
Peak to Average Power Ratio(Conducted)	QPSK 16QAM	20MHz	100/0	TPC All 1(MAX)	1720.0	20050 Low
					1732.5	20175 Mid
					1745.0	20300 High
		15MHz	75/0	TPC All 1(MAX)	1717.5	20025 Low
					1732.5	20175 Mid
					1747.5	20325 High
		10MHz	50/0	TPC All 1(MAX)	1715.0	20000 Low
					1732.5	20175 Mid
					1750.0	20350 High
		5MHz	25/0	TPC All 1(MAX)	1712.5	19975 Low
					1732.5	20175 Mid
					1752.5	20375 High
		3MHz	15/0	TPC All 1(MAX)	1711.5	19965 Low
					1732.5	20175 Mid
					1753.5	20385 High
		1.4MHz	6/0	TPC All 1(MAX)	1710.7	19957 Low
					1732.5	20175 Mid
					1754.3	20393 High

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

<LTE Band IV> 3/3

Test	Modulation	Bandwidth	UL RB Config.	Power Control	Tested frequency[MHz]	Uplink Channel
Bandwidth(Conducted)	QPSK 16QAM	20MHz	100/0	TPC All 1(MAX)	1732.5	20175 Mid
		15MHz	75/0			
		10MHz	50/0			
		5MHz	25/0			
		3MHz	15/0			
		1.4MHz	6/0			
Band Edge(Conducted)	QPSK 16QAM	20MHz	100/0	TPC All 1(MAX)	1720.0	20050 Low
			100/0	TPC All 1(MAX)	1745.0	20300 High
			1/0	TPC All 1(MAX)	1720.0	20050 Low
			1/99	TPC All 1(MAX)	1745.0	20300 High
		15MHz	75/0	TPC All 1(MAX)	1717.5	20025 Low
			75/0	TPC All 1(MAX)	1747.5	20325 High
			1/0	TPC All 1(MAX)	1717.5	20025 Low
			1/74	TPC All 1(MAX)	1747.5	20325 High
		10MHz	50/0	TPC All 1(MAX)	1715.0	20000 Low
			50/0	TPC All 1(MAX)	1750.0	20350 High
			1/0	TPC All 1(MAX)	1715.0	20000 Low
			1/49	TPC All 1(MAX)	1750.0	20350 High
		5MHz	25/0	TPC All 1(MAX)	1712.5	19975 Low
			25/0	TPC All 1(MAX)	1752.5	20375 High
			1/0	TPC All 1(MAX)	1712.5	19975 Low
			1/24	TPC All 1(MAX)	1752.5	20375 High
		3MHz	15/0	TPC All 1(MAX)	1711.5	19965 Low
			15/0	TPC All 1(MAX)	1753.5	20385 High
			1/0	TPC All 1(MAX)	1711.5	19965 Low
			1/14	TPC All 1(MAX)	1753.5	20385 High
		1.4MHz	6/0	TPC All 1(MAX)	1710.7	19957 Low
			6/0	TPC All 1(MAX)	1754.3	20393 High
			1/0	TPC All 1(MAX)	1710.7	19957 Low
			1/5	TPC All 1(MAX)	1754.3	20393 High
Band Edge(Radiated)	QPSK 16QAM	3MHz *2)	15/0	TPC All 1(MAX)	1711.5	19965 Low
			15/0	TPC All 1(MAX)	1753.5	20385 High
			1/0	TPC All 1(MAX)	1711.5	19965 Low
			1/14	TPC All 1(MAX)	1753.5	20385 High
Spurious Emission(Conducted)	QPSK	3MHz *4)	1/14	TPC All 1(MAX)	1711.5	19965 Low
Spurious Emission(Radiated)			1/14	TPC All 1(MAX)	1732.5	20175 Mid
			1/0	TPC All 1(MAX)	1753.5	20385 High
Frequency Stability (Temperature/ Voltage Variation)	QPSK 16QAM	20MHz *3)	100/0	TPC All 1(MAX)	1732.5	20175 Mid

*1) The UL RB Configuration was used for testing as a representative, because it had the highest RF output power (conducted).

*2) Test was performed with BW:3MHz as a representative as it had the highest result at Band edge (conducted) test.

*3) The widest bandwidth was chosen for testing as a representative.

*4) The Bandwidth was used for testing as a representative, because it had the highest RF output power (conducted).

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

<LTE Band VII> 1/2

Test	Modulation	Bandwidth	UL RB Config.	Power Control	Tested frequency[MHz]	Uplink Channel
RF Output Power (Conducted)	QPSK 16QAM	20MHz	1/0	TPC All 1(MAX)	2510.0	20850 Low
			1/49		2535.0	21100 Mid
			1/99		2560.0	21350 High
			50/0			
			50/24			
			50/49			
			100/0			
		15MHz	1/0	TPC All 1(MAX)	2507.5	20825 Low
			1/37		2535.0	21100 Mid
			1/74		2562.5	21375 High
			36/0			
			36/19			
			36/39			
			75/0			
		10MHz	1/0	TPC All 1(MAX)	2505.0	20800 Low
			1/24		2535.0	21100 Mid
			1/49		2565.0	21400 High
			25/0			
			25/12			
			25/24			
			50/0			
		5MHz	1/0	TPC All 1(MAX)	2502.5	20775 Low
			1/12		2535.0	21100 Mid
			1/24		2567.5	21425 High
			12/0			
			12/6			
			12/11			
			25/0			
RF Output Power(Radiated) (Equivalent Isotropic Radiated Power(EIRP))	QPSK	20MHz	1/0 *1)	TPC All 1(MAX)	2510.0	20850 Low
			1/49 *1)	TPC All 1(MAX)	2535.0	21100 Mid
			1/99 *1)	TPC All 1(MAX)	2560.0	21350 High
		15MHz	1/0 *1)	TPC All 1(MAX)	2507.5	20825 Low
			1/37 *1)	TPC All 1(MAX)	2535.0	21100 Mid
			1/74 *1)	TPC All 1(MAX)	2562.5	21375 High
		10MHz	1/0 *1)	TPC All 1(MAX)	2505.0	20800 Low
			1/24 *1)	TPC All 1(MAX)	2535.0	21100 Mid
			1/49 *1)	TPC All 1(MAX)	2565.0	21400 High
		5MHz	1/0 *1)	TPC All 1(MAX)	2502.5	20775 Low
			1/12 *1)	TPC All 1(MAX)	2535.0	21100 Mid
			1/24 *1)	TPC All 1(MAX)	2567.5	21425 High
	16QAM	20MHz	1/0 *1)	TPC All 1(MAX)	2510.0	20850 Low
			1/49 *1)	TPC All 1(MAX)	2535.0	21100 Mid
			1/99 *1)	TPC All 1(MAX)	2560.0	21350 High
		15MHz	1/0 *1)	TPC All 1(MAX)	2507.5	20825 Low
			1/37 *1)	TPC All 1(MAX)	2535.0	21100 Mid
			1/74 *1)	TPC All 1(MAX)	2562.5	21375 High
		10MHz	1/0 *1)	TPC All 1(MAX)	2505.0	20800 Low
			1/24 *1)	TPC All 1(MAX)	2535.0	21100 Mid
			1/49 *1)	TPC All 1(MAX)	2565.0	21400 High
		5MHz	1/0 *1)	TPC All 1(MAX)	2502.5	20775 Low
			1/12 *1)	TPC All 1(MAX)	2535.0	21100 Mid
			1/24 *1)	TPC All 1(MAX)	2567.5	21425 High

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

<LTE Band VII> 2/2

Test	Modulation	Bandwidth	UL RB Config.	Power Control	Tested frequency[MHz]	Uplink Channel
Peak to Average Power Ratio(Conducted)	QPSK 16QAM	20MHz	100/0	TPC All 1(MAX)	2510.0	20850 Low
					2535.0	21100 Mid
					2560.0	21350 High
		15MHz	75/0	TPC All 1(MAX)	2507.5	20825 Low
					2535.0	21100 Mid
					2562.5	21375 High
		10MHz	50/0	TPC All 1(MAX)	2505.0	20800 Low
					2535.0	21100 Mid
					2565.0	21400 High
		5MHz	25/0	TPC All 1(MAX)	2502.5	20775 Low
					2535.0	21100 Mid
					2567.5	21425 High
Bandwidth(Conducted)	QPSK 16QAM	20MHz	100/0	TPC All 1(MAX)	2535.0	21100 Mid
		15MHz	75/0			
		10MHz	50/0			
		5MHz	25/0			
Band Edge(Conducted)	QPSK 16QAM	20MHz	100/0	TPC All 1(MAX)	2510.0	20850 Low
			100/0	TPC All 1(MAX)	2560.0	21350 High
			1/0	TPC All 1(MAX)	2510.0	20850 Low
			1/99	TPC All 1(MAX)	2560.0	21350 High
		15MHz	75/0	TPC All 1(MAX)	2507.5	20825 Low
			75/0	TPC All 1(MAX)	2562.5	21375 High
			1/0	TPC All 1(MAX)	2507.5	20825 Low
			1/74	TPC All 1(MAX)	2562.5	21375 High
		10MHz	50/0	TPC All 1(MAX)	2505.0	20800 Low
			50/0	TPC All 1(MAX)	2565.0	21400 High
			1/0	TPC All 1(MAX)	2505.0	20800 Low
			1/49	TPC All 1(MAX)	2565.0	21400 High
		5MHz	25/0	TPC All 1(MAX)	2502.5	20775 Low
			25/0	TPC All 1(MAX)	2567.5	21425 High
			1/0	TPC All 1(MAX)	2502.5	20775 Low
			1/24	TPC All 1(MAX)	2567.5	21425 High
Band Edge(Radiated)	QPSK 16QAM	5MHz *2)	25/0	TPC All 1(MAX)	2502.5	20775 Low
			25/0	TPC All 1(MAX)	2567.5	21425 High
			1/0	TPC All 1(MAX)	2502.5	20775 Low
			1/24	TPC All 1(MAX)	2567.5	21425 High
Spurious Emission(Conducted) Spurious Emission(Radiated)	QPSK	10MHz *4)	1/49	TPC All 1(MAX)	2505.0	20800 Low
			1/49	TPC All 1(MAX)	2535.0	21100 Mid
			1/49	TPC All 1(MAX)	2565.0	21400 High
Frequency Stability (Temperature/ Voltage Variation)	QPSK 16QAM	20MHz *3)	100/0	TPC All 1(MAX)	2535.0	21100 Mid

*1) The UL RB Configuration was used for testing as a representative, because it had the highest RF output power (conducted).

*2) Test was performed with BW:5MHz as a representative as it had the highest result at Band edge (conducted) test.

*3) The widest bandwidth was chosen for testing as a representative.

*4) The Bandwidth was used for testing as a representative, because it had the highest RF output power (conducted).

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

<LTE Band XVII>

Test	Modulation	Bandwidth	UL RB Config.	Power Control	Tested frequency[MHz]	Uplink Channel
RF Output Power (Conducted)	QPSK 16QAM	10MHz	1/0	TPC All 1(MAX)	709.0	23780 Low
			1/24		710.0	23790 Mid
			1/49		711.0	23800 High
			25/0			
			25/12			
			25/24			
			50/0			
		5MHz	1/0	TPC All 1(MAX)	706.5	23755 Low
			1/12		710.0	23790 Mid
			1/24		713.5	23825 High
			12/0			
			12/6			
			12/11			
			25/0			
RF Output Power(Radiated) (Effective Radiated Power)	QPSK	10MHz	1/49 *1)	TPC All 1(MAX)	709.0	23780 Low
			1/0 *1)	TPC All 1(MAX)	710.0	23790 Mid
			1/49 *1)	TPC All 1(MAX)	711.0	23800 High
		5MHz	1/24 *1)	TPC All 1(MAX)	706.5	23755 Low
			1/24 *1)	TPC All 1(MAX)	710.0	23790 Mid
			1/24 *1)	TPC All 1(MAX)	713.5	23825 High
	16QAM	10MHz	1/0 *1)	TPC All 1(MAX)	709.0	23780 Low
			1/24 *1)	TPC All 1(MAX)	710.0	23790 Mid
			1/0 *1)	TPC All 1(MAX)	711.0	23800 High
		5MHz	1/24 *1)	TPC All 1(MAX)	706.5	23755 Low
			1/24 *1)	TPC All 1(MAX)	710.0	23790 Mid
			1/24 *1)	TPC All 1(MAX)	713.5	23825 High
Peak to Average Power Ratio(Conducted)	QPSK 16QAM	10MHz	50/0	TPC All 1(MAX)	709.0	23780 Low
					710.0	23790 Mid
					711.0	23800 High
		5MHz	25/0	TPC All 1(MAX)	706.5	23755 Low
					710.0	23790 Mid
					713.5	23825 High
Bandwidth(Conducted)	QPSK 16QAM	10MHz	50/0	TPC All 1(MAX)	710.0	23790 Mid
		5MHz	25/0			
Band Edge(Conducted)	QPSK 16QAM	10MHz	50/0	TPC All 1(MAX)	709.0	23780 Low
			50/0	TPC All 1(MAX)	711.0	23800 High
			1/0	TPC All 1(MAX)	709.0	23780 Low
			1/49	TPC All 1(MAX)	711.0	23800 High
		5MHz	25/0	TPC All 1(MAX)	706.5	23755 Low
			25/0	TPC All 1(MAX)	713.5	23825 High
			1/0	TPC All 1(MAX)	706.5	23755 Low
			1/24	TPC All 1(MAX)	713.5	23825 High
			25/0	TPC All 1(MAX)	706.5	23755 Low
			25/0	TPC All 1(MAX)	713.5	23825 High
Band Edge(Radiated)	QPSK 16QAM	5MHz *2)	25/0	TPC All 1(MAX)	706.5	23755 Low
			25/0	TPC All 1(MAX)	713.5	23825 High
			1/0	TPC All 1(MAX)	706.5	23755 Low
			1/24	TPC All 1(MAX)	713.5	23825 High
Spurious Emission(Conducted) Spurious Emission(Radiated)	QPSK	10MHz *4)	1/49	TPC All 1(MAX)	709.0	23780 Low
			1/0	TPC All 1(MAX)	710.0	23790 Mid
			1/49	TPC All 1(MAX)	711.0	23800 High
Frequency Stability (Temperature/ Voltage Variation)	QPSK 16QAM	10MHz *3)	50/0	TPC All 1(MAX)	710.0	23790 Mid

*1) The UL RB Configuration was used for testing as a representative, because it had the highest RF output power (conducted).

*2) Test was performed with BW:5MHz as a representative as it had the highest result at Band edge (conducted) test.

*3) The widest bandwidth was chosen for testing as a representative.

*4) The Bandwidth was used for testing as a representative, because it had the highest RF output power (conducted).

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

4.1.1 Explanation of the Rel-99 WCDMA, Rel-6 HSPA, Rel-7 HSPA+ and Rel-8 DC-HSDPA measurement mode

3GPP defines UE Test Modes and Channel Configurations for Regulatory Testing.

- **UE Test Modes:**
Test Mode 1(Data Loopback Test)
- **Channel Configurations:**
R99 – 12.2kpbs Reference Measurement Channel (RMC) channel
HSDPA – Fixed Reference Channel (FRC)
HSUPA – New HSUPA channel configuration (HSDPA data from DL is looped back onto UL)
- **Procedure to configure UE to transmit maximum power:**
Rel99: 3GPP TS 34.121 section 5.2
HSDPA Rel5: 3GPP TS 34.121 section 5.2A
HSDPA Rel6: 3GPP TS 34.121 section 5.2AA
HSUPA Rel6: 3GPP TS 34.121 section 5.2B
HSPA+ Rel7: Power is measured for HSPA+ that supports uplink 16 QAM according to configurations in Table C.11.1.4 of 3GPP TS 34.121-1.
DC-HSDPA Rel8:
Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

* About Rel-99 and HSDPA testing, test equipment send “all up bits” forcing UE max power

1) Explanation for HSDPA/HSPA Subtests

3GPP TS 34.121 defines test requirements and procedures for testing all variations of WCDMA. 3GPP TS 34.121 defines 4 HSDPA test configurations and 5 HSPA test configurations (“Subtests”) for various RF Conformance tests. The Following table shows Release 5 HSDPA, Release 6 HSPA, Release 7 HSPA+, Release 8 DC-HSDPA Subtest Configurations per 3GPP TS 34.121.

[HSDPA and DC-HSDPA]

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15	15/15	64	12/15	24/15	1.0	0.0
	(Note 4)	(Note 4)		(Note 4)			
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and $\Delta_{NACK} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$, and $\Delta_{CQI} = 24/15$ with $\beta_{HS} = 24/15 * \beta_c$.

Note 3: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{HS}/\beta_c = 24/15$. For all other combinations of DPDCCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$.

*HSDPA: H-set1, DC-HSDPA: H-set12

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

C.8.1.12 Fixed Reference Channel Definition H-Set 12

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{inf})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.		
Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

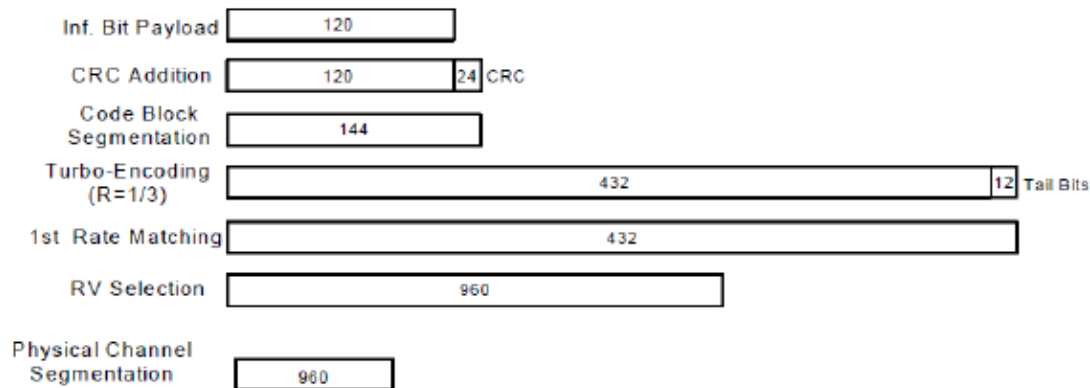


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

[HSUPA]

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 5) (Note 6)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/25	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1} : 47/15 β_{ed2} : 47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81
Note 1: Δ_{ACK}, Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$. Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference. Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$. Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$. Note 5: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g. Note 6: β_{ed} can not be set directly, it is set by Absolute Grant Value.													

[HSPA+]

Table C.11.1.4: β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed1} : 30/15 β_{ed2} : 30/15	β_{ed3} : 24/15 β_{ed4} : 24/15	3.5	2.5	14	105	105
Note 1: Δ_{ACK}, Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$. Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0). Note 3: DPDCH is not configured, therefore the β_c is set to 1 and $\beta_d = 0$ by default. Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value. Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.											

2) Maximum Output Power Verification

[HSDPA]

Maximum output power was verified on High, Middle and Low channels according to the Release 5 procedures described in section 5.2 of 3GPP TS 34.121, using an FRC with H-set 1 and 12.2kbps RMC with TPC (transmit power control) set to all "1's". Output power was measured according requirements for HS-DPCCH Sub-test 1-4.

[HSUPA]

Maximum output power was verified on the High, Middle and Low channels according to Release 6 procedures in section 5.2 of 3GPP TS 34.121, using the appropriate RMC, FRC and E-DCH configurations. When E-DCH was active, inner loop power control with power control algorithm 2 was used to maintain E-TFCI requirements. Output power for the applicable HSPA modes was measured for E-DCH Sub-test 1-5.

[HSPA+]

Power is measured for HSPA+ that supports uplink 16 QAM according to configurations in Table C.11.1.4 of 3GPP TS 34.121-1.

[DC-HSDPA]

Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

3) Test Equipment Setting Summary Table

The following table is the key parameters that was configured in test equipment.

Subtest	Mode	Loopback Mode	Rel99 RMC	HSDPA FRC	HSUPA Test	Common Setting		β_c/β_d	MPR	Power Class 3 limit
						β_c	β_d			
	Rel99	Test Mode 1	12.2kbps RMC	-	-	-	-	8/15	-	24(+1.7/-3.7dB)
1	Rel6 HSDPA	Test Mode 1	12.2kbps RMC	H-Set 1 (QPSK)	-	2/15	15/15	2/15	0	24(+1.7/-3.7dB)
2	Rel6 HSDPA	Test Mode 1	12.2kbps RMC	H-Set 1 (QPSK)	-	12/15	15/15	12/15	0	24(+1.7/-3.7dB)
3	Rel6 HSDPA	Test Mode 1	12.2kbps RMC	H-Set 1 (QPSK)	-	15/15	8/15	15/8	0.5	23.5(+2.2/-3.7dB)
4	Rel6 HSDPA	Test Mode 1	12.2kbps RMC	H-Set 1 (QPSK)	-	15/15	4/15	15/4	0.5	23.5(+2.2/-3.7dB)
1	Rel6 HSUPA	Test Mode 1	12.2kbps RMC	H-Set 1 (QPSK)	HSUPA Loopback	11/15	15/15	11/15	0	24(+1.7/-3.7dB)
2	Rel6 HSUPA	Test Mode 1	12.2kbps RMC	H-Set 1 (QPSK)	HSUPA Loopback	6/15	15/15	6/15	2	22(+3.7/-3.7dB)
3	Rel6 HSUPA	Test Mode 1	12.2kbps RMC	H-Set 1 (QPSK)	HSUPA Loopback	15/15	9/15	15/9	1	23(+2.7/-3.7dB)
4	Rel6 HSUPA	Test Mode 1	12.2kbps RMC	H-Set 1 (QPSK)	HSUPA Loopback	2/15	15/15	2/15	2	22(+3.7/-3.7dB)
5	Rel6 HSUPA	Test Mode 1	12.2kbps RMC	H-Set 1 (QPSK)	HSUPA Loopback	15/15	15/15	15/15	0	24(+1.7/-3.7dB)

Subtest	HSDPA Specific Settings						
	Δ ACK	Δ NACK	Δ CQI	Ack-Nack repetition factor	CQI Feedback	CQI Repetition Factor	Ahs= β_{hs}/β_c
Rel 6 HSDPA							
1	8	8	8	3	4ms	2	30/15
2	8	8	8	3	4ms	2	30/15
3	8	8	8	3	4ms	2	30/15
4	8	8	8	3	4ms	2	30/15

Subtest	HSDPA Specific Settings							HSUPA Specific Settings			HSUPA Additional Info	
	Δ ACK	Δ NACK	Δ CQI	Ack-Nack repetition factor	CQI Feedback	CQI Repetition Factor	Ahs= β_{hs}/β_c	Δ E-DPCCH	Δ HARQ	AG Index	ETFCI (form TS34.121 Table C.11.1.3)	Associated Max UL Data Rate kbps
Rel 6 HSPA												
1	8	8	8	3	4ms	2	30/15	6	0	20	75	242.1
2	8	8	8	3	4ms	2	30/15	8	0	12	67	174.9
3	8	8	8	3	4ms	2	30/15	8	0	15	92	482.8
4	8	8	8	3	4ms	2	30/15	5	0	17	71	205.8
5	8	8	8	3	4ms	2	30/15	7	0	21	81	308.9

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

HSUPA Reference E-TFCI Parameters
[Subtest 1,2,4,5]

Information Element	Value/Remark
E-DCH info	Uplink DPCH info
- E-DPDCH info	
- Reference E-TFCIs	5 E-TFCIs
- Reference E-TFCI	11
- Reference E-TFCI PO	4
- Reference E-TFCI	67
- Reference E-TFCI PO	18
- Reference E-TFCI	71
- Reference E-TFCI PO	23
- Reference E-TFCI	75
- Reference E-TFCI PO	26
- Reference E-TFCI	81
- Reference E-TFCI PO	27

[Subtest 3]

Information Element	Value/Remark
E-DCH info	Uplink DPCH info
- E-DPDCH info	
- Reference E-TFCIs	2 E-TFCIs
- Reference E-TFCI	11
- Reference E-TFCI PO	4
- Reference E-TFCI	92
- Reference E-TFCI PO	18

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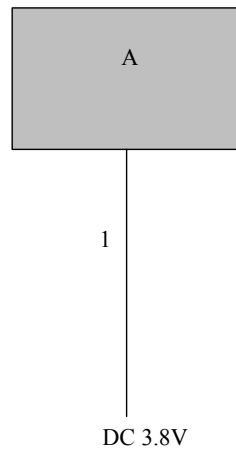
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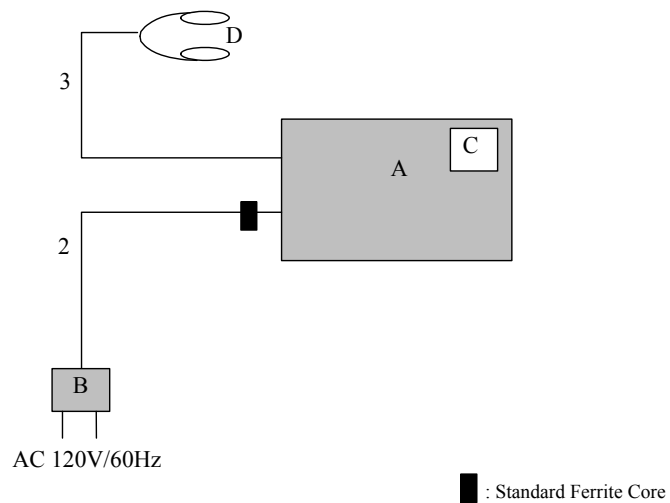
Facsimile : +81 596 24 8124

4.2 Configuration and peripherals

[Antenna terminal conducted test]



[All tests except for antenna terminal conducted test]



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

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Description of EUT

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Digital Camera	DMC-CM1	004401221416114 *1) 004401221415512 *2)	Panasonic	EUT
B	AC Adaptor	VSK0825	k4000106PH	Panasonic	EUT
C	Micro SD Card	02GUECA-MB	-	Panasonic	-
D	Earphone	-	-	Panasonic	-

*1) Used for antenna terminal conducted test.

*2) Used for all tests except for antenna terminal conducted test.

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Cable	2.0	Unshielded	Unshielded	-
2	DC Cable	1.2	Unshielded	Unshielded	-
3	Earphone Cable	1.2	Unshielded	Unshielded	-

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SECTION 5: RF Output Power (Conducted/Radiated)

[Conducted: Conducted Output Power]

Test Procedure

The RF output power (conducted) was measured with a Wireless Communication Test Set and an attenuator at the antenna port.

[Radiated : Equivalent isotropic radiated power(EIRP) / Effective radiated power (ERP)]

Test Procedure

- 1) EUT was placed on a urethane platform of nominal size, 1.0 m by 0.5m, raised 80cm above the conducting ground plane. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The Radiated Electric Field Strength intensity has been measured in a semi anechoic chamber with a ground plane and at a distance of 3m. The measuring antenna height varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.
- 2) Exchanged the EUT to the Substitution Antenna, the antenna was set for the same height as EUT on the table. Horn antenna calibrated with the Half wave dipole antenna was used as a substitution antenna for testing at the frequency above 1GHz, which is harmonized with the measured frequency in 1). The Substitution Antenna was connected with the Signal Generator, and the polarized electromagnetic radiation of the Substitution Antenna was matched with the one of the measuring Antenna, which was set with the Signal Generator to the measured frequency in 1). Then, we set with the Output power (CW) of the Signal Generator where the measuring electromagnetic field is equal to the measured value in 1). The measuring antenna height varied between 1 and 4m to obtain the maximum receiving level. Its Output power of Signal Generator was recorded.
- 3) Equivalent isotropic radiated power(EIRP) / Effective radiated power (ERP) were calculated by subtracting the cable loss and the attenuator loss connected between the Signal Generator and the Substitution Antenna from the Output power of the Signal Generator recorded in 2).

- The carrier level and noise levels were confirmed at each position of X, Y and Z axis of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

Test data	:	APPENDIX 1
Test result	:	Pass

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SECTION 6: Bandwidth (Conducted)

Test Procedure

The Emission Bandwidth and 99% Occupied Bandwidth was measured with a spectrum analyzer and attenuator connected to the antenna port.

Test data	:	APPENDIX 1
Test result	:	Pass

SECTION 7: Spurious Emission and Band-Edge (Conducted/Radiated)

[Conducted]

Test Procedure

The Spurious Emission and Band-Edge was measured with a spectrum analyzer and attenuator connected to the antenna port.

[Radiated]

Test Procedure

- 1) EUT was placed on a urethane platform of nominal size, 1.0 m by 0.5m, raised 80cm above the conducting ground plane. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The Radiated Electric Field Strength intensity has been measured in a semi anechoic chamber with a ground plane and at a distance of 3m. The measuring antenna height varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.
- 2) Exchanged the EUT to the Substitution Antenna, the antenna was set for the same height as EUT on the table. Half wave dipole antenna was used as a substitution antenna for testing at the frequency below 1GHz, which is harmonized with the measured frequency in 1). Horn antenna calibrated with the Half wave dipole antenna was used as a substitution antenna for testing at the frequency above 1GHz, which is harmonized with the measured frequency in 1). The Substitution antenna was connected with the Signal Generator, and the polarized electromagnetic radiation of the Substitution antenna was matched with the one of the measuring antenna, which was set with the Signal Generator to the measured frequency in 1). Then, we set with the Output power (CW) of the Signal Generator where the measuring electromagnetic field is equal to the measured value in 1). The measuring antenna height varied between 1 and 4m to obtain the maximum receiving level. Its Output power of Signal Generator was recorded.
- 3) Equivalent isotropic radiated power(EIRP) was calculated by subtracting the cable loss and the attenuator loss connected between the Signal Generator and the Substitution Antenna from the Output power of the Signal Generator recorded in 2).

- The carrier level and noise levels were confirmed at each position of X, Y and Z axis of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

Test data	:	APPENDIX 1
Test result	:	Pass

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SECTION 8: Frequency Stability(Temperature/Voltage Variation)

Test Procedure

The Frequency Stability was measured with a Wireless Communication Test Set and attenuator connected to the antenna port.

The Frequency Drift was measured with the 10 deg. C. steps from -30 deg. C. to 50 deg. C., and it is presented as the ppm unit. The Frequency Drift was measured with the normal temperature (20 deg. C.) and Voltage tolerance (DC 3.0V to DC 4.2V), and it is presented as the ppm unit.

Temperature	:	-30deg.C to +50deg.C (10 deg. C. step)
Voltage	:	Vnom:DC3.8V, Vmin:DC3.0V, Vmax:DC4.2V (Battery Output)

As the operating input voltage of the EUT is between DC 3.0V to DC 4.2V (nominal voltage: DC 3.8V), Frequency Stability test was performed under the above condition.

Test data	:	APPENDIX 1
Test result	:	Pass

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APPENDIX 1: Data of EMI test

RF Output Power (Conducted)

Conducted Output Power W-CDMA Band IV

Test place Ise EMC Lab. No.6 Measurement Room
Report No. 10636726H
Date 01/26/2015
Temperature/ Humidity 22deg. C / 48% RH
Engineer Yutaka Yoshida
Mode Tx W-CDMA

Mode	Ch	Frequency [MHz]	Result AV [dBm]
RMC 12.2kbps	Low	1712.4	23.47
	Mid	1732.6	23.37
	High	1752.6	23.25
HSDPA Subtest 1	Low	1712.4	22.51
	Mid	1732.6	22.38
	High	1752.6	22.41
HSDPA Subtest 2	Low	1712.4	22.50
	Mid	1732.6	22.32
	High	1752.6	22.40
HSDPA Subtest 3	Low	1712.4	22.07
	Mid	1732.6	21.92
	High	1752.6	22.01
HSDPA Subtest 4	Low	1712.4	22.07
	Mid	1732.6	21.92
	High	1752.6	22.01
DC-HSDPA Subtest 1	Low	1712.4	22.44
	Mid	1732.6	22.09
	High	1752.6	22.23
DC-HSDPA Subtest 2	Low	1712.4	22.61
	Mid	1732.6	22.44
	High	1752.6	22.44
DC-HSDPA Subtest 3	Low	1712.4	22.01
	Mid	1732.6	21.95
	High	1752.6	21.98
DC-HSDPA Subtest 4	Low	1712.4	22.08
	Mid	1732.6	21.95
	High	1752.6	21.97
HSUPA Subtest 1	Low	1712.4	22.45
	Mid	1732.6	22.33
	High	1752.6	22.09
HSUPA Subtest 2	Low	1712.4	21.58
	Mid	1732.6	21.42
	High	1752.6	21.40
HSUPA Subtest 3	Low	1712.4	21.07
	Mid	1732.6	20.95
	High	1752.6	21.01
HSUPA Subtest 4	Low	1712.4	22.07
	Mid	1732.6	21.88
	High	1752.6	21.86
HSUPA Subtest 5	Low	1712.4	22.51
	Mid	1732.6	22.39
	High	1752.6	22.47
HSPA+ (16QAM) Subtest 1	Low	1712.4	20.71
	Mid	1732.6	20.77
	High	1752.6	20.56

*The enhanced power reduction may result in around 1dB of variance from the MPR target values depending on HSPA channel configuration (e.g. 34.121 subtest) and characteristics of hardware RF design.

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Facsimile : +81 596 24 8124

RF Output Power (Conducted)
Conducted Output Power
LTE Band IV

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 01/15/2015
Temperature/ Humidity : 24deg. C / 43% RH
Engineer : Yutaka Yoshida
Mode : Tx

BW	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)
20	20050	1720	QPSK	1	0	0	0	22.79
				1	49	0	0	22.79
				1	99	0	0	22.87
				50	0	1	1	21.99
				50	24	1	1	21.87
				50	49	1	1	21.89
				100	0	1	1	21.88
			16QAM	1	0	1	1	21.97
				1	49	1	1	22.00
				1	99	1	1	22.06
				50	0	2	2	20.99
				50	24	2	2	20.93
				50	49	2	2	20.89
				100	0	2	2	20.91
	20175	1732.5	QPSK	1	0	0	0	22.67
				1	49	0	0	22.71
				1	99	0	0	22.78
				50	0	1	1	21.74
				50	24	1	1	21.88
				50	49	1	1	21.94
				100	0	1	1	21.90
			16QAM	1	0	1	1	21.94
				1	49	1	1	21.94
				1	99	1	1	22.06
				50	0	2	2	20.81
				50	24	2	2	20.90
				50	49	2	2	20.99
				100	0	2	2	20.87
	20300	1745	QPSK	1	0	0	0	22.64
				1	49	0	0	22.78
				1	99	0	0	22.74
				50	0	1	1	21.86
				50	24	1	1	21.87
				50	49	1	1	21.79
				100	0	1	1	21.88
			16QAM	1	0	1	1	21.87
				1	49	1	1	22.00
				1	99	1	1	21.94
				50	0	2	2	20.89
				50	24	2	2	20.95
				50	49	2	2	20.91
				100	0	2	2	20.93

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Facsimile : +81 596 24 8124

RF Output Power (Conducted)
Conducted Output Power
LTE Band IV

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 01/15/2015
Temperature/ Humidity : 24deg. C / 43% RH
Engineer : Yutaka Yoshida
Mode : Tx

BW	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)
15	20025	1717.5	QPSK	1	0	0	0	22.91
				1	37	0	0	22.82
				1	74	0	0	22.84
				36	0	1	1	22.02
				36	19	1	1	21.95
				36	39	1	1	21.89
			16QAM	75	0	1	1	22.02
				1	0	1	1	21.66
				1	37	1	1	21.71
				1	74	1	1	21.70
				36	0	2	2	20.89
				36	19	2	2	20.84
				36	39	2	2	20.79
				75	0	2	2	20.93
	20175	1732.5	QPSK	1	0	0	0	22.88
				1	37	0	0	22.83
				1	74	0	0	22.91
				36	0	1	1	21.76
				36	19	1	1	21.83
				36	39	1	1	21.91
			16QAM	75	0	1	1	21.94
				1	0	1	1	21.71
				1	37	1	1	21.66
				1	74	1	1	21.64
				36	0	2	2	20.78
				36	19	2	2	20.81
				36	39	2	2	20.91
				75	0	2	2	20.89
	20325	1747.5	QPSK	1	0	0	0	22.87
				1	37	0	0	22.84
				1	74	0	0	22.85
				36	0	1	1	21.85
				36	19	1	1	21.95
				36	39	1	1	21.84
			16QAM	75	0	1	1	21.83
				1	0	1	1	21.59
				1	37	1	1	21.60
				1	74	1	1	21.60
				36	0	2	2	20.89
				36	19	2	2	20.89
				36	39	2	2	20.84
				75	0	2	2	20.86

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Facsimile : +81 596 24 8124

RF Output Power (Conducted)
Conducted Output Power
LTE Band IV

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 01/15/2015
Temperature/ Humidity : 24deg. C / 43% RH
Engineer : Yutaka Yoshida
Mode : Tx

BW	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)
10	20000	1715	QPSK	1	0	0	0	22.95
				1	24	0	0	22.89
				1	49	0	0	23.00
				25	0	1	1	21.91
				25	12	1	1	21.96
				25	24	1	1	21.87
			16QAM	50	0	1	1	21.98
				1	0	1	1	21.73
				1	24	1	1	21.64
				1	49	1	1	21.78
				25	0	2	2	20.92
				25	12	2	2	20.90
				25	24	2	2	20.91
				50	0	2	2	20.98
	20175	1732.5	QPSK	1	0	0	0	22.88
				1	24	0	0	22.88
				1	49	0	0	22.92
				25	0	1	1	21.80
				25	12	1	1	21.85
				25	24	1	1	21.87
			16QAM	50	0	1	1	21.88
				1	0	1	1	21.69
				1	24	1	1	21.65
				1	49	1	1	21.64
				25	0	2	2	20.77
				25	12	2	2	20.84
				25	24	2	2	20.91
				50	0	2	2	20.85
	20350	1750	QPSK	1	0	0	0	22.90
				1	24	0	0	22.91
				1	49	0	0	22.88
				25	0	1	1	21.78
				25	12	1	1	21.82
				25	24	1	1	21.82
			16QAM	50	0	1	1	21.85
				1	0	1	1	21.67
				1	24	1	1	21.61
				1	49	1	1	21.53
				25	0	2	2	20.83
				25	12	2	2	20.79
				25	24	2	2	20.89
				50	0	2	2	20.87

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Facsimile : +81 596 24 8124

RF Output Power (Conducted)

Conducted Output Power LTE Band IV

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/15/2015
Temperature/ Humidity	24deg. C / 43% RH
Engineer	Yutaka Yoshida
Mode	Tx

BW	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)		
5	19975	1712.5	QPSK	1	0	0	0	22.93		
				1	12	0	0	22.94		
				1	24	0	0	22.90		
				12	0	1	1	21.91		
				12	6	1	1	21.97		
				12	11	1	1	21.99		
			16QAM	25	0	1	1	21.94		
				1	0	1	1	21.72		
				1	12	1	1	21.72		
				1	24	1	1	21.70		
				12	0	2	2	20.99		
				12	6	2	2	20.99		
	20175	1732.5	QPSK	12	11	2	2	20.99		
				25	0	2	2	21.01		
				16QAM	1	0	0	0	22.78	
					1	12	0	0	22.80	
					1	24	0	0	22.89	
					12	0	1	1	21.86	
			12		6	1	1	21.78		
			12		11	1	1	21.88		
			20375	1752.5	QPSK	25	0	1	1	21.83
						1	0	1	1	21.60
						1	12	1	1	21.59
						1	24	1	1	21.72
	12	0				2	2	20.88		
	12	6				2	2	20.91		
	16QAM	12			11	2	2	20.90		
		25			0	2	2	20.95		
		1			0	0	0	22.82		
		1			12	0	0	22.86		
		1			24	0	0	22.82		
		12			0	1	1	21.81		
	20175	1732.5	QPSK	12	6	1	1	21.79		
				12	11	1	1	21.75		
				25	0	1	1	21.73		
				16QAM	1	0	1	1	21.60	
					1	12	1	1	21.62	
					1	24	1	1	21.60	
			12		0	2	2	20.91		
			12		6	2	2	20.90		
			12		11	2	2	20.81		
			25	0	2	2	20.87			

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Facsimile : +81 596 24 8124

RF Output Power (Conducted)

Conducted Output Power LTE Band IV

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/15/2015
Temperature/ Humidity	24deg. C / 43% RH
Engineer	Yutaka Yoshida
Mode	Tx

BW	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)
3	19965	1711.5	QPSK	1	0	0	0	22.96
				1	7	0	0	22.94
				1	14	0	0	23.06
				8	0	1	1	21.94
				8	4	1	1	21.91
				8	7	1	1	21.97
				15	0	1	1	21.98
			16QAM	1	0	1	1	21.78
				1	7	1	1	21.73
				1	14	1	1	21.78
				8	0	2	2	20.95
				8	4	2	2	20.93
				8	7	2	2	20.97
				15	0	2	2	20.96
	20175	1732.5	QPSK	1	0	0	0	22.90
				1	7	0	0	22.87
				1	14	0	0	22.97
				8	0	1	1	21.87
				8	4	1	1	21.84
				8	7	1	1	21.84
				15	0	1	1	21.86
			16QAM	1	0	1	1	21.68
				1	7	1	1	21.65
				1	14	1	1	21.71
				8	0	2	2	20.87
				8	4	2	2	20.86
				8	7	2	2	20.87
				15	0	2	2	20.89
	20385	1753.5	QPSK	1	0	0	0	22.95
				1	7	0	0	22.81
				1	14	0	0	22.89
				8	0	1	1	21.77
				8	4	1	1	21.65
				8	7	1	1	21.75
				15	0	1	1	21.71
			16QAM	1	0	1	1	21.68
				1	7	1	1	21.53
				1	14	1	1	21.60
				8	0	2	2	20.88
				8	4	2	2	20.77
				8	7	2	2	20.78
				15	0	2	2	20.78

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Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

RF Output Power (Conducted)
Conducted Output Power
LTE Band IV

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 01/15/2015
Temperature/ Humidity : 24deg. C / 43% RH
Engineer : Yutaka Yoshida
Mode : Tx

BW	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)
1.4	19957	1710.7	QPSK	1	0	0	0	22.98
				1	2	0	0	22.89
				1	5	0	0	22.92
				3	0	0	0	22.96
				3	1	0	0	22.97
				3	3	0	0	22.89
			16QAM	6	0	1	1	22.02
				1	0	1	1	22.03
				1	2	1	1	21.97
				1	5	1	1	22.03
				3	0	1	1	21.94
				3	1	1	1	21.90
	20175	1732.5	QPSK	3	3	1	1	21.88
				6	0	2	2	21.00
			16QAM	1	0	0	0	22.86
				1	2	0	0	22.81
				1	5	0	0	22.85
				3	0	0	0	22.83
				3	1	0	0	22.83
				3	3	0	0	22.84
	20393	1754.3	QPSK	6	0	1	1	21.87
				1	0	1	1	21.85
				1	2	1	1	21.82
				1	5	1	1	21.86
				3	0	1	1	21.78
				3	1	1	1	21.77
			16QAM	3	3	1	1	21.78
				6	0	2	2	20.95
			QPSK	1	0	0	0	22.84
				1	2	0	0	22.74
				1	5	0	0	22.81
				3	0	0	0	22.80
				3	1	0	0	22.78
				3	3	0	0	22.79
			16QAM	6	0	1	1	21.72
				1	0	1	1	21.86
				1	2	1	1	21.82
				1	5	1	1	21.84
				3	0	1	1	21.74
				3	1	1	1	21.73
				3	3	1	1	21.72
				6	0	2	2	20.87

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4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

RF Output Power (Conducted)
Conducted Output Power
LTE Band VII

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 01/15/2015
Temperature/ Humidity : 24deg. C / 43% RH
Engineer : Yutaka Yoshida
Mode : Tx

BW	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)
20	20850	2510	QPSK	1	0	0	0	22.83
				1	49	0	0	23.05
				1	99	0	0	22.94
				50	0	1	1	22.18
				50	24	1	1	22.20
				50	49	1	1	22.10
				100	0	1	1	22.14
			16QAM	1	0	1	1	22.32
				1	49	1	1	22.28
				1	99	1	1	22.28
				50	0	2	2	21.24
				50	24	2	2	21.23
				50	49	2	2	21.18
				100	0	2	2	21.19
	21100	2535	QPSK	1	0	0	0	22.73
				1	49	0	0	22.70
				1	99	0	0	22.91
				50	0	1	1	21.89
				50	24	1	1	21.93
				50	49	1	1	21.96
				100	0	1	1	22.01
			16QAM	1	0	1	1	22.03
				1	49	1	1	22.06
				1	99	1	1	22.18
				50	0	2	2	20.98
				50	24	2	2	20.98
				50	49	2	2	21.00
				100	0	2	2	20.97
	21350	2560	QPSK	1	0	0	0	22.73
				1	49	0	0	22.94
				1	99	0	0	23.12
				50	0	1	1	22.01
				50	24	1	1	22.12
				50	49	1	1	22.22
				100	0	1	1	22.12
			16QAM	1	0	1	1	22.02
				1	49	1	1	22.24
				1	99	1	1	22.38
				50	0	2	2	21.04
				50	24	2	2	21.12
				50	49	2	2	21.27
				100	0	2	2	21.12

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Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

RF Output Power (Conducted)
Conducted Output Power
LTE Band VII

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 01/15/2015
Temperature/ Humidity : 24deg. C / 43% RH
Engineer : Yutaka Yoshida
Mode : Tx

BW	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)
15	20825	2507.5	QPSK	1	0	0	0	23.05
				1	37	0	0	23.20
				1	74	0	0	23.04
				36	0	1	1	22.20
				36	19	1	1	22.29
				36	39	1	1	22.25
			16QAM	75	0	1	1	22.24
				1	0	1	1	22.02
				1	37	1	1	22.11
				1	74	1	1	21.88
				36	0	2	2	21.21
				36	19	2	2	21.23
	21100	2535	QPSK	36	39	2	2	21.17
				75	0	2	2	21.24
				1	0	0	0	22.84
				1	37	0	0	22.89
				1	74	0	0	22.91
				36	0	1	1	21.98
			16QAM	36	19	1	1	21.97
				36	39	1	1	21.99
				75	0	1	1	22.02
				1	0	1	1	21.69
				1	37	1	1	21.77
				1	74	1	1	21.74
	21375	2562.5	QPSK	36	0	2	2	20.99
				36	19	2	2	20.94
				36	39	2	2	20.96
				75	0	2	2	20.96
				1	0	0	0	23.11
				1	37	0	0	23.05
			16QAM	1	74	0	0	23.19
				36	0	1	1	22.16
				36	19	1	1	22.13
				36	39	1	1	22.29
				75	0	1	1	22.16
				1	0	1	1	21.83

RF Output Power (Conducted)
Conducted Output Power
LTE Band VII

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 01/15/2015
Temperature/ Humidity : 24deg. C / 43% RH
Engineer : Yutaka Yoshida
Mode : Tx

BW	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)
10	20800	2505	QPSK	1	0	0	0	23.03
				1	24	0	0	23.07
				1	49	0	0	23.51
				25	0	1	1	22.19
				25	12	1	1	22.23
				25	24	1	1	22.28
			16QAM	50	0	1	1	22.24
				1	0	1	1	22.04
				1	24	1	1	22.03
				1	49	1	1	22.02
				25	0	2	2	21.21
				25	12	2	2	21.30
	21100	2535	QPSK	25	24	2	2	21.24
				50	0	2	2	21.27
			16QAM	1	0	1	1	21.94
				1	24	1	1	21.69
				1	49	1	1	21.75
				1	0	1	1	21.80
	21400	2565	QPSK	25	0	2	2	20.94
				25	12	2	2	20.98
				25	24	2	2	20.96
				50	0	2	2	20.97
			16QAM	1	0	0	0	23.06
				1	24	0	0	23.23
				1	49	0	0	23.24
				25	0	1	1	22.15
				25	12	1	1	22.23
				25	24	1	1	22.29
			16QAM	50	0	1	1	22.26
				1	0	1	1	21.91
				1	24	1	1	22.03
				1	49	1	1	22.07
				25	0	2	2	21.10
				25	12	2	2	21.17
				25	24	2	2	21.18
				50	0	2	2	21.22

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Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

RF Output Power (Conducted)
Conducted Output Power
LTE Band VII

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 01/15/2015
Temperature/ Humidity : 24deg. C / 43% RH
Engineer : Yutaka Yoshida
Mode : Tx

BW	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)
5	20775	2502.5	QPSK	1	0	0	0	22.98
				1	12	0	0	22.97
				1	24	0	0	23.05
				12	0	1	1	22.15
				12	6	1	1	22.15
				12	11	1	1	22.17
			25	0	1	1	22.13	
			16QAM	1	0	1	1	22.10
				1	12	1	1	22.07
				1	24	1	1	22.17
				12	0	2	2	21.19
				12	6	2	2	21.22
	12	11		2	2	21.22		
	21100	2535	QPSK	25	0	2	2	21.25
				1	0	0	0	22.81
				1	12	0	0	22.86
				1	24	0	0	22.92
				12	0	1	1	22.01
				12	6	1	1	21.92
			16QAM	12	11	1	1	21.98
				25	0	1	1	21.94
				1	0	1	1	21.63
				1	12	1	1	21.69
				1	24	1	1	21.76
12				0	2	2	20.99	
21425	2567.5	QPSK	12	6	2	2	20.97	
			12	11	2	2	21.01	
			25	0	2	2	21.07	
			1	0	0	0	23.19	
			1	12	0	0	23.14	
			1	24	0	0	23.14	
		16QAM	12	0	1	1	22.23	
			12	6	1	1	22.20	
			12	11	1	1	22.18	
			25	0	1	1	22.22	
			1	0	1	1	21.98	
			1	12	1	1	21.98	
	1	24	1	1	22.00			
	12	0	2	2	21.23			
	12	6	2	2	21.24			
	12	11	2	2	21.24			
	25	0	2	2	21.30			

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4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

RF Output Power (Conducted)
Conducted Output Power
LTE Band XVII

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 01/15/2015
Temperature/ Humidity : 24deg. C / 43% RH
Engineer : Yutaka Yoshida
Mode : Tx

BW	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)
10	23780	709	QPSK	1	0	0	0	22.72
				1	24	0	0	22.69
				1	49	0	0	22.76
				25	0	1	1	21.63
				25	12	1	1	21.62
				25	24	1	1	21.64
			16QAM	50	0	1	1	21.69
				1	0	1	1	21.48
				1	24	1	1	21.48
				1	49	1	1	21.48
				25	0	2	2	20.64
				25	12	2	2	20.65
	23790	710	QPSK	25	24	2	2	20.62
				50	0	2	2	20.68
				1	0	0	0	22.73
				1	24	0	0	22.72
				1	49	0	0	22.71
				25	0	1	1	21.65
	23800	711	QPSK	25	12	1	1	21.64
				25	24	1	1	21.64
				50	0	1	1	21.68
				1	0	1	1	21.46
				1	24	1	1	21.47
				1	49	1	1	21.46
			16QAM	25	0	2	2	20.65
				25	12	2	2	20.60
				25	24	2	2	20.61
				50	0	2	2	20.68
				1	0	0	0	22.69
				1	24	0	0	22.66
23800	711	QPSK	1	49	0	0	22.72	
			25	0	1	1	21.62	
			25	12	1	1	21.61	
			25	24	1	1	21.61	
			50	0	1	1	21.68	
			1	0	1	1	21.47	
		16QAM	1	24	1	1	21.39	
			1	49	1	1	21.45	
			25	0	2	2	20.65	
			25	12	2	2	20.64	
			25	24	2	2	20.62	
			50	0	2	2	20.67	

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4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

RF Output Power (Conducted)
Conducted Output Power
LTE Band XVII

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 01/15/2015
Temperature/ Humidity : 24deg. C / 43% RH
Engineer : Yutaka Yoshida
Mode : Tx

BW	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)		
5	23755	706.5	QPSK	1	0	0	0	22.71		
				1	12	0	0	22.64		
				1	24	0	0	22.72		
				12	0	1	1	21.71		
				12	6	1	1	21.65		
				12	11	1	1	21.70		
			25	0	1	1	21.64			
			16QAM	1	0	1	1	21.46		
				1	12	1	1	21.43		
				1	24	1	1	21.51		
				12	0	2	2	20.71		
				12	6	2	2	20.72		
				12	11	2	2	20.73		
			25	0	2	2	20.77			
			23790	710	QPSK	1	0	0	0	22.64
						1	12	0	0	22.57
						1	24	0	0	22.65
						12	0	1	1	21.65
	12	6				1	1	21.65		
	12	11				1	1	21.55		
	25	0			1	1	21.66			
	16QAM	1			0	1	1	21.40		
		1			12	1	1	21.41		
		1			24	1	1	21.48		
		12			0	2	2	20.68		
		12			6	2	2	20.66		
		12	11	2	2	20.70				
	25	0	2	2	20.75					
	23825	713.5	QPSK	1	0	0	0	22.63		
				1	12	0	0	22.55		
				1	24	0	0	22.66		
				12	0	1	1	21.58		
				12	6	1	1	21.59		
				12	11	1	1	21.61		
			25	0	1	1	21.57			
			16QAM	1	0	1	1	21.36		
				1	12	1	1	21.36		
				1	24	1	1	21.48		
				12	0	2	2	20.67		
				12	6	2	2	20.65		
	12	11		2	2	20.66				
	25	0	2	2	20.72					

RF Output Power (Radiated)
Equivalent Isotropically Radiated Power(EIRP)
W-CDMA Band IV

Report No. 10636726H
Test place Ise EMC Lab. No.2 Semi Anechoic Chamber
Date 01/23/2015
Temperature / Humidity 22deg. C / 24 % RH
Engineer Tomoki Matsui
Mode Tx W-CDMA (RMC 12.2kbps), All Up Bits

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Atten. Loss [dB]	Result (EIRP) [dBm]		Limit (EIRP) [dBm]	Margin [dB]		Horizontal Rx Ant. Height [cm]		Turn Table [deg.]		Vertical Rx Ant. Height [cm]		Turn Table [deg.]		Remarks
	HOR	VER	HOR	VER				HOR	VER		HOR	VER									
1712.40	94.4	97.7	18.8	20.3	3.4	9.3	0.0	24.7	26.2	30.0	5.4	3.9	152	357	126	253					
1732.60	94.3	97.3	19.9	20.1	3.4	9.4	0.0	25.8	26.0	30.0	4.2	4.0	151	329	100	242					
1752.60	94.0	97.9	18.8	20.4	3.5	9.5	0.0	24.8	26.4	30.0	5.2	3.6	154	349	125	253					

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-20GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-20GHz)

Detector : S/A PK (RBW: 5MHz, VBW: 50MHz)

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

RF Output Power (Radiated)
Equivalent Isotropically Radiated Power(EIRP)
LTE Band IV

Report No. 10636726H
Test place Ise EMC Lab. No.4 Semi Anechoic Chamber
Date 01/23/2015
Temperature / Humidity 23deg. C / 35 % RH
Engineer Takumi Shimada
Mode Tx LTE (QPSK), Tx LTE (16QAM)

[BW 1.4MHz, QPSK, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Atten. Loss [dB]	Result (EIRP) [dBm]		Limit (EIRP) [dBm]	Margin [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER				HOR	VER		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]			
1710.70	90.8	95.3	15.4	18.1	3.4	9.3	0.0	21.2	23.9	30.0	8.8	6.1	159	301	100	280	RB 1-0
1732.50	90.6	94.6	15.2	17.3	3.4	9.4	0.0	21.1	23.2	30.0	8.9	6.8	159	301	100	280	RB 1-0
1754.30	90.6	93.5	15.3	16.3	3.5	9.5	0.0	21.3	22.3	30.0	8.7	7.7	159	301	100	280	RB 1-0

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss
Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)
Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)
Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
Detector : Spectrum Analyzer RMS Average (RBW: 30kHz , VBW: 91kHz)

[BW 1.4MHz, 16QAM, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Loss [dB]	Result (EIRP) [dBm]		Limit (EIRP) [dBm]	Margin [dB]		Horizontal Rx Ant. Height [cm] Turn Table [deg.]		Vertical Rx Ant. Height [cm] Turn Table [deg.]		Remarks
	HOR	VER	HOR	VER				HOR	VER		HOR	VER					
1710.70	89.5	94.3	14.1	17.1	3.4	9.3	0.0	19.9	22.9	30.0	10.1	7.1	159	301	100	280	RB 1-0
1732.50	89.4	93.7	14.0	16.4	3.4	9.4	0.0	19.9	22.3	30.0	10.1	7.7	159	301	100	280	RB 1-5
1754.30	89.5	92.5	14.2	15.3	3.5	9.5	0.0	20.2	21.3	30.0	9.8	8.7	159	301	100	280	RB 1-0

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss
Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)
Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)
Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
Detector : Spectrum Analyzer RMS Average (RBW: 30kHz , VBW: 91kHz)

RF Output Power (Radiated)
Equivalent Isotropically Radiated Power(EIRP)
LTE Band IV

Report No. 10636726H
Test place Ise EMC Lab. No.4 Semi Anechoic Chamber
Date 01/23/2015
Temperature / Humidity 23deg. C / 35 % RH
Engineer Takumi Shimada
Mode Tx LTE (QPSK), Tx LTE (16QAM)

[BW 3MHz, QPSK, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Loss [dB]	Result (EIRP) [dBm]		Limit (EIRP) [dBm]	Margin [dB]		Horizontal Rx Ant. Height [cm] Turn Table [deg.]		Vertical Rx Ant. Height [cm] Turn Table [deg.]		Remarks
	HOR	VER	HOR	VER				HOR	VER		HOR	VER	HOR	VER	HOR	VER	
1711.50	90.7	95.0	15.3	17.8	3.4	9.3	0.0	21.1	23.6	30.0	8.9	6.4	159	301	100	280	RB 1-14
1732.50	90.6	94.7	15.2	17.4	3.4	9.4	0.0	21.1	23.3	30.0	8.9	6.7	159	301	100	280	RB 1-14
1753.50	90.7	93.6	15.4	16.4	3.5	9.5	0.0	21.4	22.4	30.0	8.6	7.6	159	301	100	280	RB 1-0

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)

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

Detector : Spectrum Analyzer RMS Average (RBW: 30kHz , VBW: 91kHz)

[BW 3MHz, 16QAM, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Atten. Loss [dB]	Result (EIRP) [dBm]		Limit (EIRP) [dBm]	Margin [dB]		Horizontal Rx Ant. Height [cm] Turn Table [deg.]		Vertical Rx Ant. Height [cm] Turn Table [deg.]		Remarks
	HOR	VER	HOR	VER				HOR	VER	HOR	VER						
1711.50	89.4	94.1	14.0	16.9	3.4	9.3	0.0	19.8	22.7	30.0	10.2	7.3	159	301	100	280	RB 1-0
1732.50	89.4	93.6	14.0	16.3	3.4	9.4	0.0	19.9	22.2	30.0	10.1	7.8	159	301	100	280	RB 1-14
1753.50	89.3	92.6	14.0	15.4	3.5	9.5	0.0	20.0	21.4	30.0	10.0	8.6	159	301	100	280	RB 1-0

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)

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

Detector : Spectrum Analyzer RMS Average (RBW: 30kHz , VBW: 91kHz)

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

RF Output Power (Radiated)
Equivalent Isotropically Radiated Power(EIRP)
LTE Band IV

Report No. 10636726H
Test place Ise EMC Lab. No.4 Semi Anechoic Chamber
Date 01/23/2015
Temperature / Humidity 23deg. C / 35 % RH
Engineer Takumi Shimada
Mode Tx LTE (QPSK), Tx LTE (16QAM)

[BW 5MHz, QPSK, 1 RB]

Frequency	Rx SA/TR		Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks
	Reading		Reading		Cable	Ant.	Atten.	(EIRP)		(EIRP)	[dB]		Rx Ant.	Turn	Rx Ant.	Turn	
	[dBuV]		[dBm]		Loss	Gain	Loss	[dBm]		[dBm]			Height	Table	Height	Table	
	[MHz]	HOR	VER	HOR	VER	[dB]	[dBi]	[dB]	HOR	VER	HOR	VER	[cm]	[deg.]	[cm]	[deg.]	
1712.50	90.7	95.1	15.3	17.9	3.4	9.3	0.0	21.1	23.7	30.0	8.9	6.3	159	301	100	280	RB 1-12
1732.50	90.7	94.6	15.3	17.3	3.4	9.4	0.0	21.2	23.2	30.0	8.8	6.8	159	301	100	280	RB 1-24
1752.50	90.6	93.6	15.3	16.4	3.5	9.5	0.0	21.3	22.4	30.0	8.7	7.6	159	301	100	280	RB 1-12

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)

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

Detector : Spectrum Analyzer RMS Average (RBW: 200kHz, VBW: 620kHz)

[BW 5MHz, 16QAM, 1 RB]

Frequency	Rx SA/TR		Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks
	Reading		Reading		Cable Loss	Ant. Gain	Atten. Loss	(EIRP)		(EIRP)		Rx Ant. Height	Turn Table	Rx Ant. Height	Turn Table		
	[dBuV]		[dBm]					[dBm]									
[MHz]	HOR	VER	HOR	VER	[dB]	[dBi]	[dB]	HOR	VER		HOR	VER	[cm]	[deg.]	[cm]	[deg.]	
1712.50	89.2	94.4	13.8	17.2	3.4	9.3	0.0	19.6	23.0	30.0	10.4	7.0	159	301	100	280	RB 1-0
1732.50	89.4	93.4	14.0	16.1	3.4	9.4	0.0	19.9	22.0	30.0	10.1	8.0	159	301	100	280	RB 1-24
1752.50	89.4	92.5	14.1	15.3	3.5	9.5	0.0	20.1	21.3	30.0	9.9	8.7	159	301	100	280	RB 1-12

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)

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

Detector : Spectrum Analyzer RMS Average (RBW: 200kHz, VBW: 620kHz)

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

RF Output Power (Radiated)
Equivalent Isotropically Radiated Power(EIRP)
LTE Band IV

Report No. 10636726H
Test place Ise EMC Lab. No.4 Semi Anechoic Chamber
Date 01/23/2015
Temperature / Humidity 23deg. C / 35 % RH
Engineer Takumi Shimada
Mode Tx LTE (QPSK), Tx LTE (16QAM)

[BW 10MHz, QPSK, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Loss [dB]	Result (EIRP) [dBm]		Limit (EIRP) [dBm]	Margin [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER				HOR	VER		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]			
1715.00	90.4	94.5	15.0	17.3	3.4	9.3	0.0	20.8	23.1	30.0	9.2	6.9	159	301	100	280	RB 1-49
1732.50	90.3	94.5	14.9	17.2	3.4	9.4	0.0	20.8	23.1	30.0	9.2	6.9	159	301	100	280	RB 1-49
1750.00	90.3	93.8	15.0	16.6	3.5	9.5	0.0	21.0	22.6	30.0	9.0	7.4	159	301	100	280	RB 1-24

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss
Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)
Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)
Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
Detector : Spectrum Analyzer RMS Average (RBW: 200kHz , VBW: 620kHz)

[BW 10MHz, 16QAM, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Atten. Loss [dB]	Result (EIRP) [dBm]		Limit (EIRP) [dBm]	Margin [dB]		Horizontal Rx Ant. Height [cm] Turn Table [deg.]		Vertical Rx Ant. Height [cm] Turn Table [deg.]		Remarks
	HOR	VER	HOR	VER			HOR	VER		HOR	VER						
1715.00	89.4	93.4	14.0	16.2	3.4	9.3	0.0	19.8	22.0	30.0	10.2	8.0	159	301	100	280	RB 1-49
1732.50	89.5	93.3	14.1	16.0	3.4	9.4	0.0	20.0	21.9	30.0	10.0	8.1	159	301	100	280	RB 1-0
1750.00	89.1	93.3	13.8	16.1	3.5	9.5	0.0	19.8	22.1	30.0	10.2	7.9	159	301	100	280	RB 1-0

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss
Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)
Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)
Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
Detector : Spectrum Analyzer RMS Average (RBW: 200kHz , VBW: 620kHz)

RF Output Power (Radiated)
Equivalent Isotropically Radiated Power(EIRP)
LTE Band IV

Report No. 10636726H
Test place Ise EMC Lab. No.4 Semi Anechoic Chamber
Date 01/23/2015
Temperature / Humidity 23deg. C / 35 % RH
Engineer Takumi Shimada
Mode Tx LTE (QPSK), Tx LTE (16QAM)

[BW 15MHz, QPSK, 1 RB]

Frequency	Rx SA/TR		Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks
	Reading		Reading		Cable Loss	Ant. Gain	Atten. Loss	(EIRP)		(EIRP)			Rx Ant. Height	Turn Table	Rx Ant. Height	Turn Table	
	[dBuV]		[dBm]					[dBm]									
	[MHz]	HOR	VER	HOR				VER	[dB]								
1717.50	90.8	94.9	15.4	17.7	3.4	9.3	0.0	21.2	23.5	30.0	8.8	6.5	159	301	100	280	RB 1-0
1732.50	90.3	94.3	14.9	17.0	3.4	9.4	0.0	20.8	22.9	30.0	9.2	7.1	159	301	100	280	RB 1-74
1747.50	90.5	94.2	15.2	17.0	3.5	9.5	0.0	21.2	23.0	30.0	8.8	7.0	159	301	100	280	RB 1-0

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)

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

Detector : Spectrum Analyzer RMS Average (RBW: 200kHz, VBW: 620kHz)

[BW 15MHz, 16QAM, 1 RB]

Frequency	Rx SA/TR		Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks
	Reading		Reading		Cable Loss	Ant. Gain	Atten. Loss	(EIRP)		(EIRP)		Rx Ant. Height	Turn Table	Rx Ant. Height	Turn Table		
	[dBuV]		[dBm]					[dBm]									
[MHz]	HOR	VER	HOR	VER	[dB]	[dBi]	[dB]	HOR	VER		HOR	VER	[cm]	[deg.]	[cm]	[deg.]	
1717.50	89.3	94.4	13.9	17.2	3.4	9.3	0.0	19.7	23.0	30.0	10.3	7.0	159	301	100	280	RB 1-37
1732.50	89.7	92.8	14.3	15.5	3.4	9.4	0.0	20.2	21.4	30.0	9.8	8.6	159	301	100	280	RB 1-0
1747.50	89.0	92.4	13.7	15.2	3.5	9.5	0.0	19.7	21.2	30.0	10.3	8.8	159	301	100	280	RB 1-74

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)

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

Detector : Spectrum Analyzer RMS Average (RBW: 200kHz, VBW: 620kHz)

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

RF Output Power (Radiated)
Equivalent Isotropically Radiated Power(EIRP)
LTE Band IV

Report No. 10636726H
Test place Ise EMC Lab. No.4 Semi Anechoic Chamber
Date 01/23/2015
Temperature / Humidity 23deg. C / 35 % RH
Engineer Takumi Shimada
Mode Tx LTE (QPSK), Tx LTE (16QAM)

[BW 20MHz, QPSK, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Loss [dB]	Result (EIRP) [dBm]		Limit (EIRP) [dBm]	Margin [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER				HOR	VER		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]			
1720.00	91.0	94.5	15.6	17.3	3.4	9.3	0.0	21.4	23.1	30.0	8.6	6.9	159	301	100	280	RB 1-99
1732.50	90.5	94.3	15.1	17.0	3.4	9.4	0.0	21.0	22.9	30.0	9.0	7.1	159	301	100	280	RB 1-99
1745.00	90.7	94.0	15.4	16.8	3.5	9.5	0.0	21.4	22.8	30.0	8.6	7.2	159	301	100	280	RB 1-49

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)

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

Detector : Spectrum Analyzer RMS Average (RBW: 200kHz, VBW: 620kHz)

[BW 20MHz, 16QAM, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Atten. Loss [dB]	Result (EIRP) [dBm]		Limit (EIRP) [dBm]	Margin [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER				HOR	VER		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]			
1720.00	89.7	93.2	14.3	16.0	3.4	9.3	0.0	20.1	21.8	30.0	9.9	8.2	159	301	100	280	RB 1-99
1732.50	89.7	93.0	14.3	15.7	3.4	9.4	0.0	20.2	21.6	30.0	9.8	8.4	159	301	100	280	RB 1-0
1745.00	89.4	93.0	14.1	15.8	3.5	9.5	0.0	20.1	21.8	30.0	9.9	8.2	159	301	100	280	RB 1-49

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)

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

Detector : Spectrum Analyzer RMS Average (RBW: 200kHz, VBW: 620kHz)

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

RF Output Power (Radiated)
Equivalent Isotropically Radiated Power(EIRP)
LTE Band VII

Report No. 10636726H
Test place Ise EMC Lab. No.2 Semi Anechoic Chamber
Date 01/27/2015
Temperature / Humidity 22deg. C / 35 % RH
Engineer Hironobu Ohnishi
Mode Tx LTE (QPSK), Tx LTE (16QAM)

[BW 5MHz, QPSK, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Loss [dB]	Result (EIRP) [dBm]		Limit (EIRP) [dBm]	Margin [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER				HOR	VER		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]			
2502.50	90.1	90.3	15.9	17.3	4.1	10.7	0.0	22.4	23.8	30.0	7.6	6.2	112	337	100	282	RB 1-0
2535.00	88.7	90.4	15.3	17.7	4.2	10.6	0.0	21.7	24.2	30.0	8.3	5.8	110	336	100	280	RB 1-12
2567.50	86.6	89.2	13.1	16.7	4.2	10.6	0.0	19.5	23.1	30.0	10.5	6.9	110	332	100	282	RB 1-24

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss
Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)
Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)
Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
Detector : Spectrum Analyzer RMS Average (RBW: 200kHz, VBW: 620kHz)

[BW 5MHz, 16QAM, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Loss [dB]	Result (EIRP) [dBm]		Limit (EIRP) [dBm]	Margin [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER				HOR	VER		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]			
2502.50	88.8	89.3	14.7	16.3	4.1	10.7	0.0	21.2	22.8	30.0	8.8	7.2	112	337	100	282	RB 1-0
2535.00	87.5	89.2	14.1	16.5	4.2	10.6	0.0	20.5	23.0	30.0	9.5	7.0	110	336	100	280	RB 1-12
2567.50	86.0	88.6	12.4	16.1	4.2	10.6	0.0	18.9	22.6	30.0	11.1	7.4	110	332	100	282	RB 1-24

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss
Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)
Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)
Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
Detector : Spectrum Analyzer RMS Average (RBW: 200kHz, VBW: 620kHz)

RF Output Power (Radiated)
Equivalent Isotropically Radiated Power(EIRP)
LTE Band VII

Report No. 10636726H
Test place Ise EMC Lab. No.2 Semi Anechoic Chamber
Date 01/27/2015
Temperature / Humidity 22deg. C / 35 % RH
Engineer Hironobu Ohnishi
Mode Tx LTE (QPSK), Tx LTE (16QAM)

[BW 10MHz, QPSK, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Atten. Loss [dB]	Result (EIRP) [dBm]		Limit (EIRP) [dBm]	Margin [dB]		Horizontal Rx Ant. Height [cm] Turn Table [deg.]		Vertical Rx Ant. Height [cm] Turn Table [deg.]		Remarks
	HOR	VER	HOR	VER				HOR	VER		HOR	VER					
2505.00	90.2	90.4	16.0	17.4	4.1	10.7	0.0	22.6	23.9	30.0	7.4	6.1	112	337	100	282	RB 1-0
2535.00	88.8	90.4	15.3	17.7	4.2	10.6	0.0	21.8	24.2	30.0	8.2	5.8	110	336	100	280	RB 1-24
2565.00	86.8	89.4	13.2	16.8	4.2	10.6	0.0	19.7	23.3	30.0	10.3	6.7	110	332	100	282	RB 1-49

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)

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

Detector : Spectrum Analyzer RMS Average (RBW: 200kHz, VBW: 620kHz)

[BW 10MHz, 16QAM, 1 RB]

Frequency	Rx SA/TR		Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks
	Reading [dBuV]		Reading [dBm]		Cable Loss	Ant. Gain	Atten. Loss	(EIRP) [dBm]		(EIRP) [dBm]	[dB]		Rx Ant. Height	Turn Table	Rx Ant. Height	Turn Table	
	[MHz]	HOR	VER	HOR	VER	[dB]	[dBi]	[dB]	HOR	VER	HOR	VER	[cm]	[deg.]	[cm]	[deg.]	
2505.00	88.9	89.3	14.7	16.3	4.1	10.7	0.0	21.3	22.9	30.0	8.7	7.1	112	337	100	282	RB 1-0
2535.00	87.6	89.1	14.2	16.4	4.2	10.6	0.0	20.6	22.9	30.0	9.4	7.1	110	336	100	280	RB 1-24
2565.00	86.0	88.8	12.5	16.3	4.2	10.6	0.0	18.9	22.7	30.0	11.1	7.3	110	332	100	282	RB 1-49

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)

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

Detector : Spectrum Analyzer RMS Average (RBW: 200kHz, VBW: 620kHz)

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

RF Output Power (Radiated)
Equivalent Isotropically Radiated Power(EIRP)
LTE Band VII

Report No. 10636726H
Test place Ise EMC Lab. No.2 Semi Anechoic Chamber
Date 01/27/2015
Temperature / Humidity 22deg. C / 35 % RH
Engineer Hironobu Ohnishi
Mode Tx LTE (QPSK), Tx LTE (16QAM)

[BW 15MHz, QPSK, 1 RB]

Frequency	Rx SA/TR		Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks
	Reading [dBuV]		Reading [dBm]		Cable Loss [dB]	Ant. Gain [dBi]	Atten. Loss [dB]	(EIRP) [dBm]		(EIRP) [dBm]	[dB]		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]	
	[MHz]	HOR	VER	HOR				VER	HOR		VER	HOR					
2507.50	90.2	90.4	16.0	17.4	4.1	10.7	0.0	22.5	23.9	33.0	10.5	9.1	112	337	100	282	RB 1-0
2535.00	88.7	90.4	15.3	17.7	4.2	10.6	0.0	21.7	24.2	33.0	11.3	8.8	110	336	100	280	RB 1-37
2562.50	86.8	89.3	13.3	16.8	4.2	10.6	0.0	19.7	23.2	33.0	13.3	9.8	110	332	100	282	RB 1-74

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)

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

Detector : Spectrum Analyzer RMS Average (RBW: 200kHz , VBW: 620kHz)

[BW 15MHz, 16QAM, 1 RB]

Frequency	Rx SA/TR		Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks
	Reading		Reading		Cable Loss	Ant. Gain	Atten. Loss	(EIRP)		(EIRP)	[dB]	Rx Ant. Height	Turn Table	Rx Ant. Height	Turn Table		
	[dBuV]		[dBm]					[dBm]									
[MHz]	HOR	VER	HOR	VER	[dB]	[dBi]	[dB]	HOR	VER		HOR	VER	[cm]	[deg.]	[cm]	[deg.]	
2507.50	89.0	89.2	14.8	16.3	4.1	10.7	0.0	21.3	22.8	33.0	11.7	10.2	112	337	100	282	RB 1-0
2535.00	87.6	89.2	14.1	16.5	4.2	10.6	0.0	20.6	23.0	33.0	12.4	10.0	110	336	100	280	RB 1-37
2562.50	86.2	88.8	12.7	16.3	4.2	10.6	0.0	19.1	22.7	33.0	13.9	10.3	110	332	100	282	RB 1-74

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)

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

Detector : Spectrum Analyzer RMS Average (RBW: 200kHz , VBW: 620kHz)

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

RF Output Power (Radiated)
Equivalent Isotropically Radiated Power(EIRP)
LTE Band VII

Report No. 10636726H
Test place Ise EMC Lab. No.2 Semi Anechoic Chamber
Date 01/27/2015
Temperature / Humidity 22deg. C / 35 % RH
Engineer Hironobu Ohnishi
Mode Tx LTE (QPSK), Tx LTE (16QAM)

[BW 20MHz, QPSK, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Loss [dB]	Result (EIRP) [dBm]		Limit (EIRP) [dBm]	Margin [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER				HOR	VER		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]			
2510.00	90.1	90.3	15.9	17.3	4.1	10.7	0.0	22.4	23.8	33.0	10.6	9.2	112	337	100	282	RB 1-0
2535.00	88.7	90.4	15.3	17.8	4.2	10.6	0.0	21.7	24.3	33.0	11.3	8.7	110	336	100	280	RB 1-49
2560.00	86.7	89.2	13.2	16.7	4.2	10.6	0.0	19.6	23.2	33.0	13.4	9.8	110	332	100	282	RB 1-99

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss
Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)
Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)
Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
Detector : Spectrum Analyzer RMS Average (RBW: 200kHz , VBW: 620kHz)

[BW 20MHz, 16QAM, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Loss [dB]	Result (EIRP) [dBm]		Limit (EIRP) [dBm]	Margin [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER				HOR	VER		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]			
2510.00	89.0	89.4	14.8	16.4	4.1	10.7	0.0	21.3	22.9	33.0	11.7	10.1	112	337	100	282	RB 1-0
2535.00	87.5	89.2	14.1	16.5	4.2	10.6	0.0	20.5	23.0	33.0	12.5	10.0	110	336	100	280	RB 1-49
2560.00	86.1	88.7	12.6	16.2	4.2	10.6	0.0	19.0	22.6	33.0	14.0	10.4	110	332	100	282	RB 1-99

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss
Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)
Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)
Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
Detector : Spectrum Analyzer RMS Average (RBW: 200kHz , VBW: 620kHz)

RF Output Power (Radiated)
Effective radiated power (ERP)
LTE Band XVII

Report No. 10636726H
Test place Ise EMC Lab. No.2 Semi Anechoic Chamber
Date 01/28/2015
Temperature / Humidity 22deg. C / 25 % RH
Engineer Hironobu Ohnishi
Mode Tx LTE (QPSK), Tx LTE (16QAM)

[BW 5MHz, QPSK, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Loss [dB]	Result (ERP) [dBm]		Limit (ERP) [dBm]	Margin [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER				HOR	VER		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]			
706.50	86.9	84.9	30.9	32.4	5.3	2.2	9.9	15.7	17.2	34.7	19.0	17.5	126	169	158	328	RB 1-24
710.00	86.9	85.0	31.1	33.0	5.3	2.2	9.9	15.8	17.8	34.7	18.9	16.9	126	169	158	328	RB 1-24
713.50	86.9	85.0	31.3	33.6	5.3	2.2	9.9	16.0	18.3	34.7	18.7	16.4	126	169	158	328	RB 1-24

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss -2.15
Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)
Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)
Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
Detector : Spectrum Analyzer RMS Average (RBW: 200kHz, VBW: 620kHz), Bandpower

[BW 5MHz, 16QAM, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Loss [dB]	Result (ERP) [dBm]		Limit (ERP) [dBm]	Margin [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER				HOR	VER		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]			
706.50	85.7	83.6	29.7	31.0	5.3	2.2	9.9	14.5	15.8	34.7	20.2	18.9	126	169	158	328	RB 1-24
710.00	85.7	83.7	29.9	31.7	5.3	2.2	9.9	14.6	16.5	34.7	20.1	18.2	126	169	158	328	RB 1-24
713.50	85.8	83.7	30.2	32.3	5.3	2.2	9.9	14.9	17.0	34.7	19.8	17.7	126	169	158	328	RB 1-24

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss -2.15
Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)
Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)
Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
Detector : Spectrum Analyzer RMS Average (RBW: 200kHz, VBW: 620kHz), Bandpower

RF Output Power (Radiated)
Effective radiated power (ERP)
LTE Band XVII

Report No. 10636726H
Test place Ise EMC Lab. No.2 Semi Anechoic Chamber
Date 01/28/2015
Temperature / Humidity 22deg. C / 25 % RH
Engineer Hironobu Ohnishi
Mode Tx LTE (QPSK), Tx LTE (16QAM)

[BW 10MHz, QPSK, 1 RB]

Frequency	Rx SA/TR		Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks
	Reading		Reading		Cable	Ant.	Atten.	(ERP)		(ERP)			Rx Ant.	Turn	Rx Ant.	Turn	
	[dBuV]		[dBm]		Loss	Gain	Loss	[dBm]		[dBm]	[dB]		Height	Table	Height	Table	
	[MHz]	HOR	VER	HOR	VER	[dB]	[dBi]	[dB]	HOR	VER	HOR	VER	[cm]	[deg.]	[cm]	[deg.]	
709.00	86.7	85.1	30.7	32.5	5.3	2.2	9.9	15.5	17.3	34.7	19.2	17.4	126	169	158	328	RB 1-49
710.00	86.9	84.9	31.1	32.9	5.3	2.2	9.9	15.9	17.7	34.7	18.8	17.0	126	169	158	328	RB 1-0
711.00	86.9	83.7	31.3	32.3	5.3	2.2	9.9	16.1	17.1	34.7	18.6	17.6	126	169	158	328	RB 1-49

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss -2.15
Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)
Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)
Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
Detector : Spectrum Analyzer RMS Average (RBW: 200kHz, VBW: 620kHz), Bandpower

[BW 10MHz, 16QAM, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Atten. Loss [dB]	Result (ERP) [dBm]		Limit (ERP) [dBm]	Margin [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER				HOR	VER		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]			
709.00	85.7	83.3	29.7	30.8	5.3	2.2	9.9	14.5	15.6	34.7	20.2	19.1	126	169	158	328	RB 1-0
710.00	85.6	83.7	29.8	31.7	5.3	2.2	9.9	14.6	16.5	34.7	20.1	18.2	126	169	158	328	RB 1-24
711.00	87.1	83.5	31.5	32.0	5.3	2.2	9.9	16.2	16.8	34.7	18.5	17.9	126	169	158	328	RB 1-0

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss -2.15
Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)
Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)
Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
Detector : Spectrum Analyzer RMS Average (RBW: 200kHz, VBW: 620kHz), Bandpower

Peak to Average power Ratio (Conducted)

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 02/05/2015
Temperature/ Humidity : 21deg. C / 34% RH
Engineer : Yutaka Yoshida
Mode : Tx W-CDMA(RMC12.2kbps), All Up Bits

Mode	Channel	Frequency [MHz]	Peak to Average Power Ratio [dB]	Limit [dB]
W-CDMA *)	1312	1712.4	3.22	13
	1413	1732.6	3.13	13
	1513	1752.6	3.08	13

*In order to decide the largest deviation between the average and the peak power of the EUT in a bandwidth, Complementary Cumulative Distribution Function (CCDF) curves of the spectrum analyzer were used for W-CDMA Signals.

Peak to Average power Ratio (Conducted)
LTE PAPR Worst Mode RB configurations

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 03/17/2015
Temperature/ Humidity : 21deg.C / 45% RH
Engineer : Yutaka Yoshida
Mode : Tx LTE (QPSK / 16QAM)

LTE Band IV

Channel	Frequency [MHz]	Bandwidth [MHz]	Moduration	RB Config.	Peak to Average Power Ratio [dB]	Worst Mode
20175	1732.50	20	QPSK	100-0	4.54	QPSK Worst
				50-24	4.38	
				1-49	4.54	
			16QAM	100-0	5.54	16QAM Worst
				50-24	5.32	
				1-49	4.40	

LTE Band VII

Channel	Frequency [MHz]	Bandwidth [MHz]	Moduration	RB Config.	Peak to Average Power Ratio [dB]	Worst Mode
21100	2535.00	20	QPSK	100-0	4.81	QPSK Worst
				50-24	4.66	
				1-49	3.87	
			16QAM	100-0	5.74	16QAM Worst
				50-24	5.60	
				1-49	4.82	

LTE Band XVII

Channel	Frequency [MHz]	Bandwidth [MHz]	Moduration	RB Config.	Peak to Average Power Ratio [dB]	Worst Mode
23790	710.00	10	QPSK	50-0	5.07	QPSK Worst
				25-12	4.84	
				1-24	4.10	
			16QAM	50-0	5.97	16QAM Worst
				25-12	5.71	
				1-24	5.07	

*In order to decide the largest deviation between the average and the peak power of the EUT in a bandwidth,

*1) Complementary Cumulative Distribution Function (CCDF) option in wideband power meter was used for LTE Signals.

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

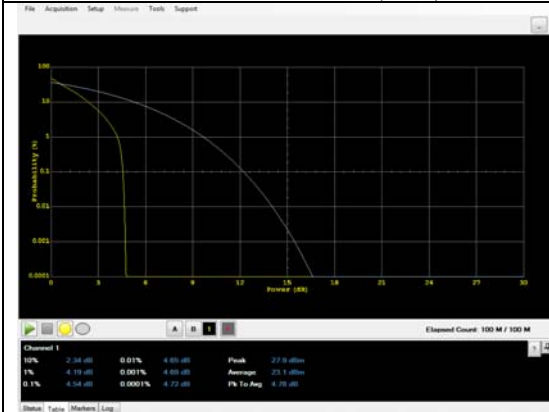
Peak to Average power Ratio (Conducted)
LTE PAPR Worst Mode RB configurations

LTE Band IV

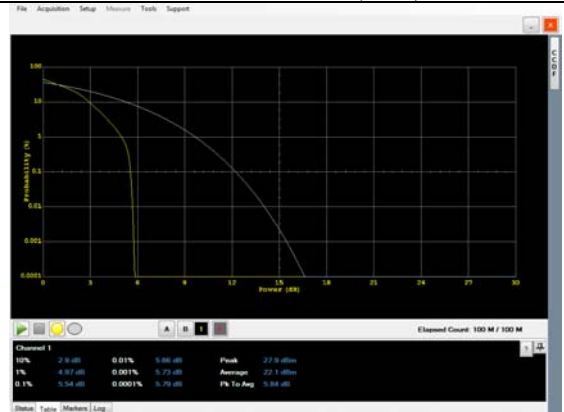
20MHz BW

1732.5MHz

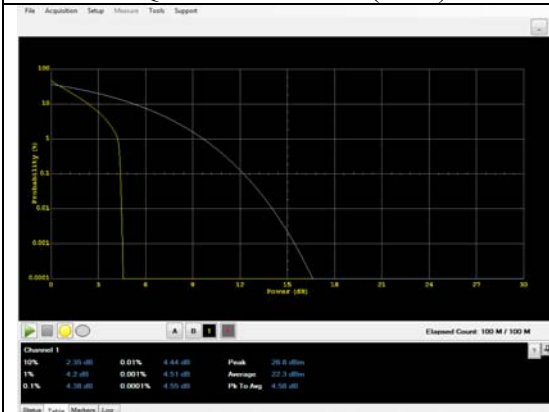
QPSK : RB 100-0(Full)



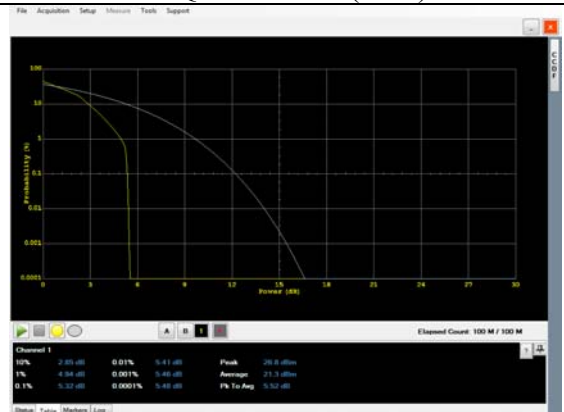
16QAM : 100-0(Full)



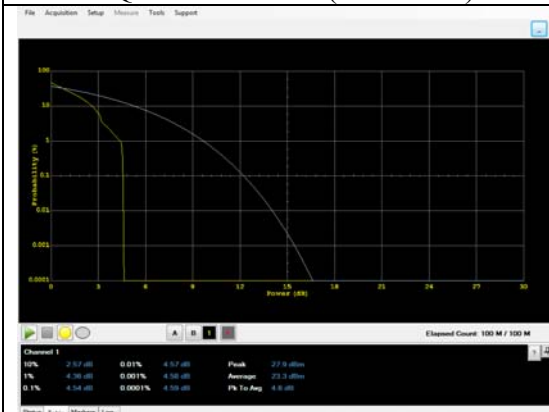
QPSK : RB 50-24(50%)



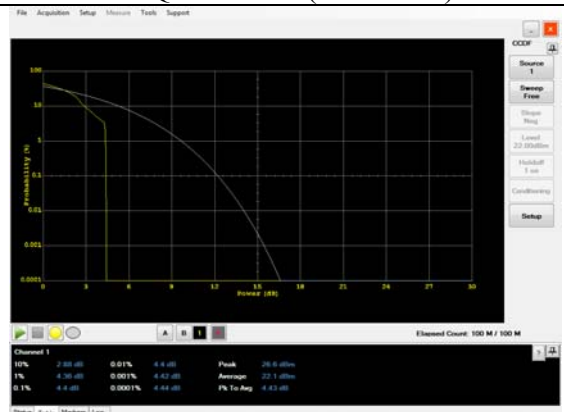
16QAM : 50-24(50%)



QPSK : RB 1-49(Minimum)



16QAM : 1-49(Minimum)



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4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

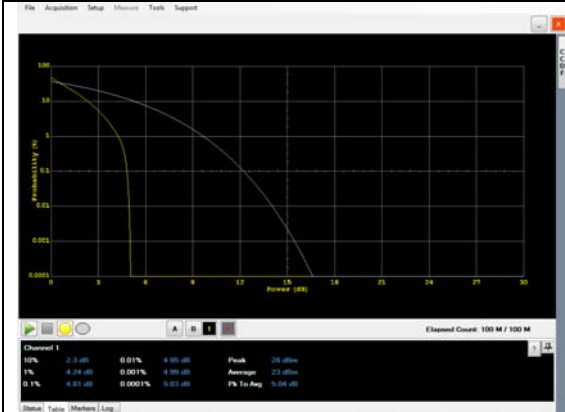
Peak to Average power Ratio (Conducted)
LTE PAPR Worst Mode RB configurations

LTE Band VII

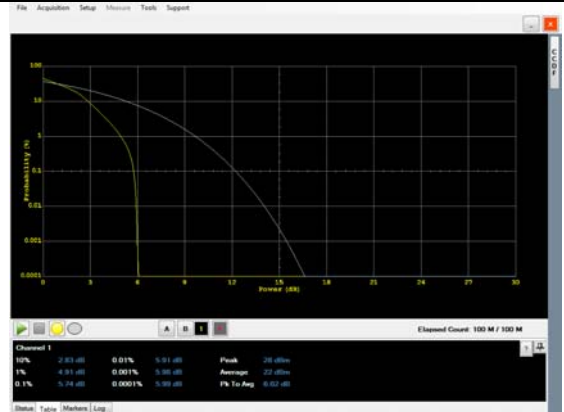
20MHz BW

2535.0MHz

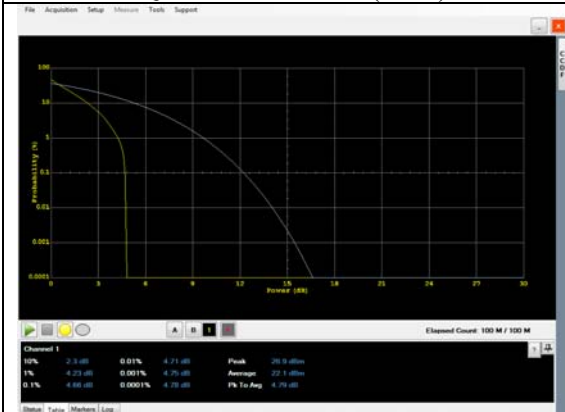
QPSK : RB 100-0(Full)



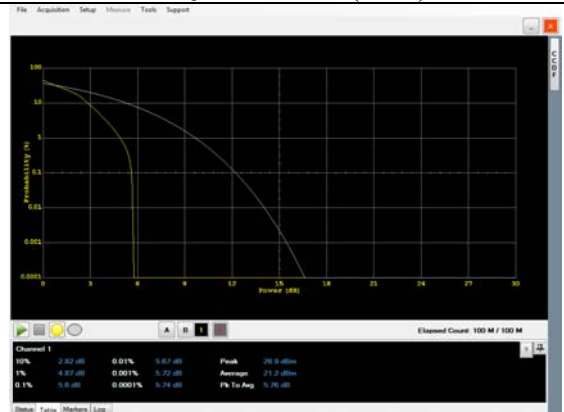
16QAM : 100-0(Full)



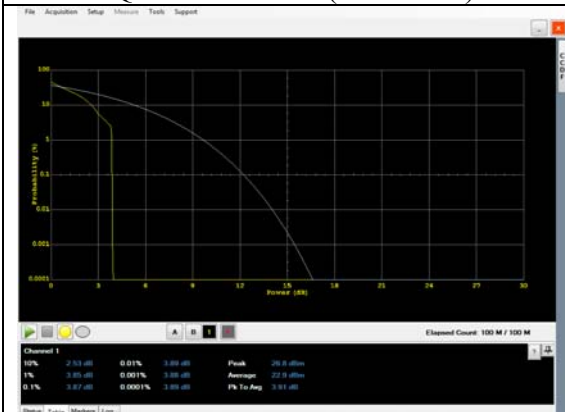
QPSK : RB 50-24(50%)



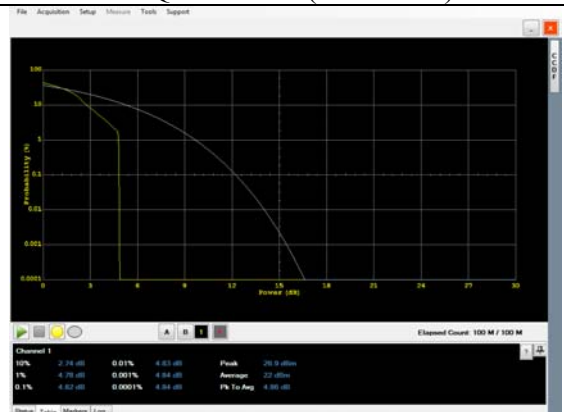
16QAM : 50-24(50%)



QPSK : RB 1-49(Minimum)



16QAM : 1-49(Minimum)



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Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

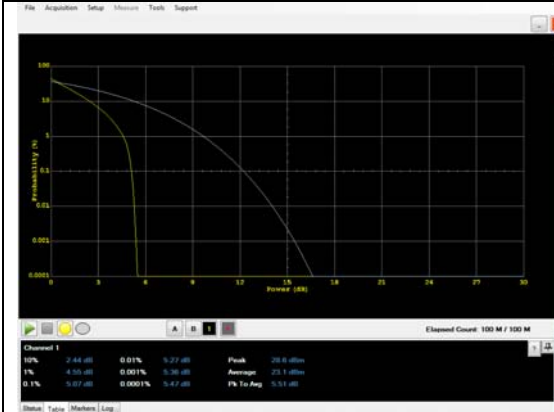
Peak to Average power Ratio (Conducted) LTE PAPR Worst Mode RB configurations

LTE Band XVII

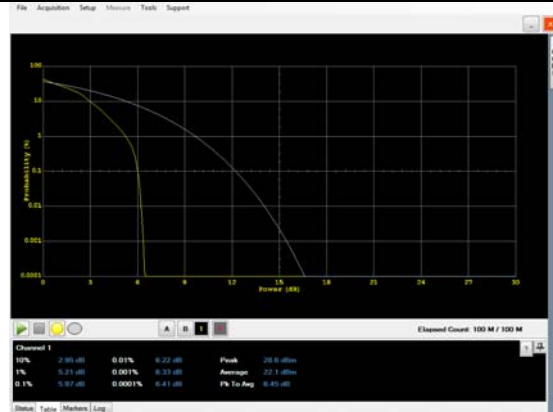
10MHz BW

710.0MHz

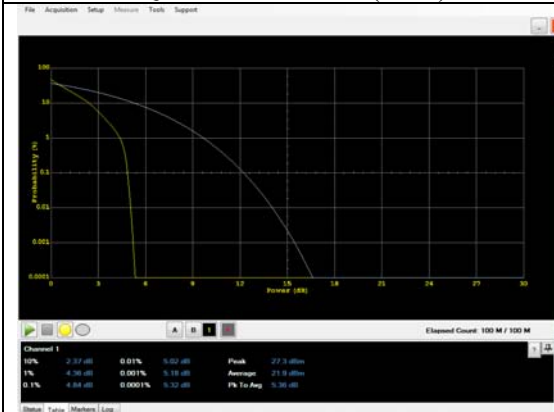
QPSK : RB 50-0(Full)



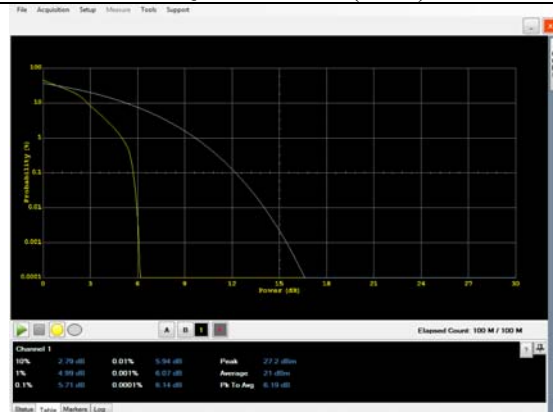
16QAM : 50-0(Full)



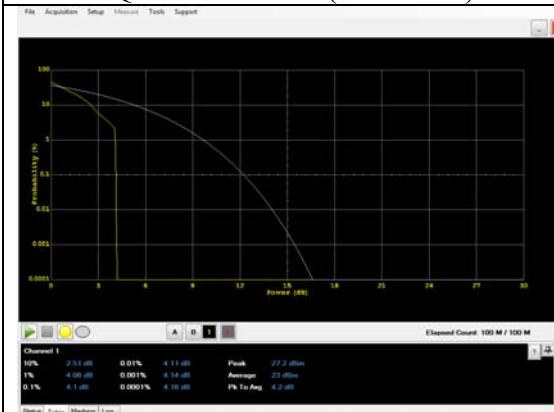
QPSK : RB 25-12(50%)



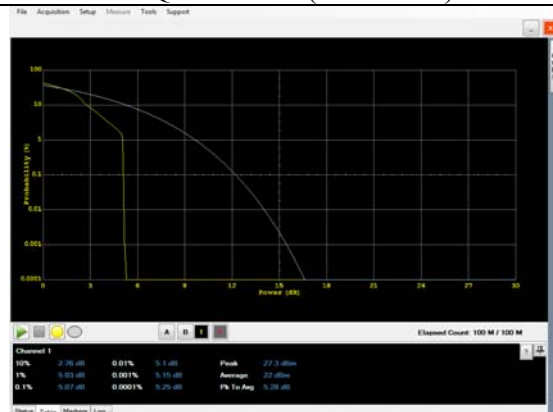
16QAM : 25-12(50%)



QPSK : RB 1-24(Minimum)



16QAM : 1-24(Minimum)



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Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Peak to Average power Ratio (Conducted)

Report No.	10636726H
Test place	Ise EMC Lab. No.6 Measurement Room
Date	01/27/2015
Temperature / Humidity	20 deg. C / 49 % RH
Engineer	Yutaka Yoshida
Mode	Tx LTE (QPSK / 16QAM)

Band IV

Mode	Channel	Frequency [MHz]	Peak to Average power Ratio [dB]
LTE 20MHz BW QPSK	20050	1720.00	4.68
	20175	1732.50	4.54
	20300	1745.00	4.69
LTE 20MHz BW 16QAM	20050	1720.00	5.65
	20175	1732.50	5.54
	20300	1745.00	5.66
LTE 15MHz BW QPSK	20025	1717.50	4.84
	20175	1732.50	4.57
	20325	1747.50	4.86
LTE 15MHz BW 16QAM	20025	1717.50	5.82
	20175	1732.50	5.51
	20325	1747.50	5.82
LTE 10MHz BW QPSK	20000	1715.00	4.98
	20175	1732.50	4.46
	20350	1750.00	4.73
LTE 10MHz BW 16QAM	20000	1715.00	5.96
	20175	1732.50	5.44
	20350	1750.00	5.72
LTE 5MHz BW QPSK	19975	1712.50	5.14
	20175	1732.50	4.47
	20375	1752.50	4.56
LTE 5MHz BW 16QAM	19975	1712.50	6.15
	20175	1732.50	5.47
	20375	1752.50	5.52
LTE 3MHz BW QPSK	19965	1711.50	5.16
	20175	1732.50	4.47
	20385	1753.50	5.32
LTE 3MHz BW 16QAM	19965	1711.50	6.16
	20175	1732.50	5.46
	20385	1753.50	6.11
LTE 1.4MHz BW QPSK	19957	1710.70	5.01
	20175	1732.50	5.36
	20393	1754.30	5.3
LTE 1.4MHz BW 16QAM	19957	1710.70	6.06
	20175	1732.50	5.99
	20393	1754.30	6.11

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

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Peak to Average power Ratio (Conducted)

Report No.	10636726H
Test place	Ise EMC Lab. No.6 Measurement Room
Date	01/27/2015
Temperature / Humidity	20 deg. C / 49 % RH
Engineer	Yutaka Yoshida
Mode	Tx LTE (QPSK / 16QAM)

Band VII

Mode	Channel	Frequency [MHz]	Peak to Average power Ratio [dB]
LTE 20MHz BW QPSK	20850	2510.00	4.64
	21100	2535.00	4.81
	21350	2560.00	4.74
LTE 20MHz BW 16QAM	20850	2510.00	5.63
	21100	2535.00	5.74
	21350	2560.00	5.68
LTE 15MHz BW QPSK	20825	2507.50	4.56
	21100	2535.00	4.84
	21375	2562.50	4.8
LTE 15MHz BW 16QAM	20825	2507.50	5.52
	21100	2535.00	5.79
	21375	2562.50	5.71
LTE 10MHz BW QPSK	20800	2505.00	4.36
	21100	2535.00	4.84
	21400	2565.00	4.55
LTE 10MHz BW 16QAM	20800	2505.00	5.91
	21100	2535.00	5.79
	21400	2565.00	5.49
LTE 5MHz BW QPSK	20775	2502.50	4.32
	21100	2535.00	4.79
	21425	2567.50	4.36
LTE 5MHz BW 16QAM	20775	2502.50	5.28
	21100	2535.00	5.77
	21425	2567.50	5.38

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Facsimile : +81 596 24 8124

Peak to Average power Ratio (Conducted)

Report No. 10636726H
Test place Ise EMC Lab. No.6 Measurement Room
Date 01/27/2015
Temperature / Humidity 20 deg. C / 49 % RH
Engineer Yutaka Yoshida
Mode Tx LTE
(QPSK / 16QAM)

Band XVII

Mode	Channel	Frequency [MHz]	Peak to Average power Ratio [dB]
LTE 10MHz BW QPSK	23780	709.00	5.06
	23790	710.00	5.07
	23800	711.00	5.04
LTE 10MHz BW 16QAM	23780	709.00	5.97
	23790	710.00	5.97
	23800	711.00	5.98
LTE 5MHz BW QPSK	23755	706.50	5.01
	23790	710.00	4.7
	23825	713.50	4.78
LTE 5MHz BW 16QAM	23755	706.50	5.99
	23790	710.00	5.63
	23825	713.50	5.79

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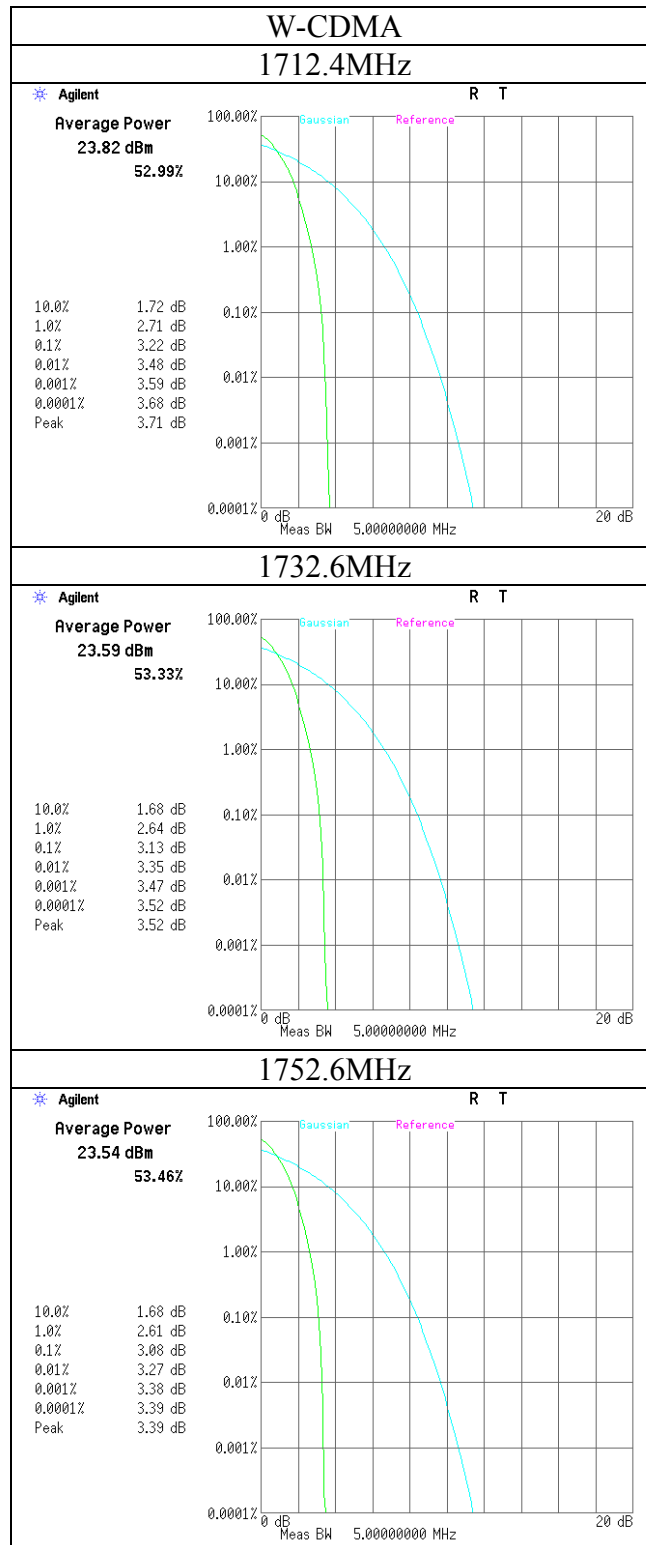
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Peak to Average power Ratio (Conducted) W-CDMA Band IV



*Set the spectrum analyzer radio mode to 3GPP W-CDMA (Power Stat CCDF)

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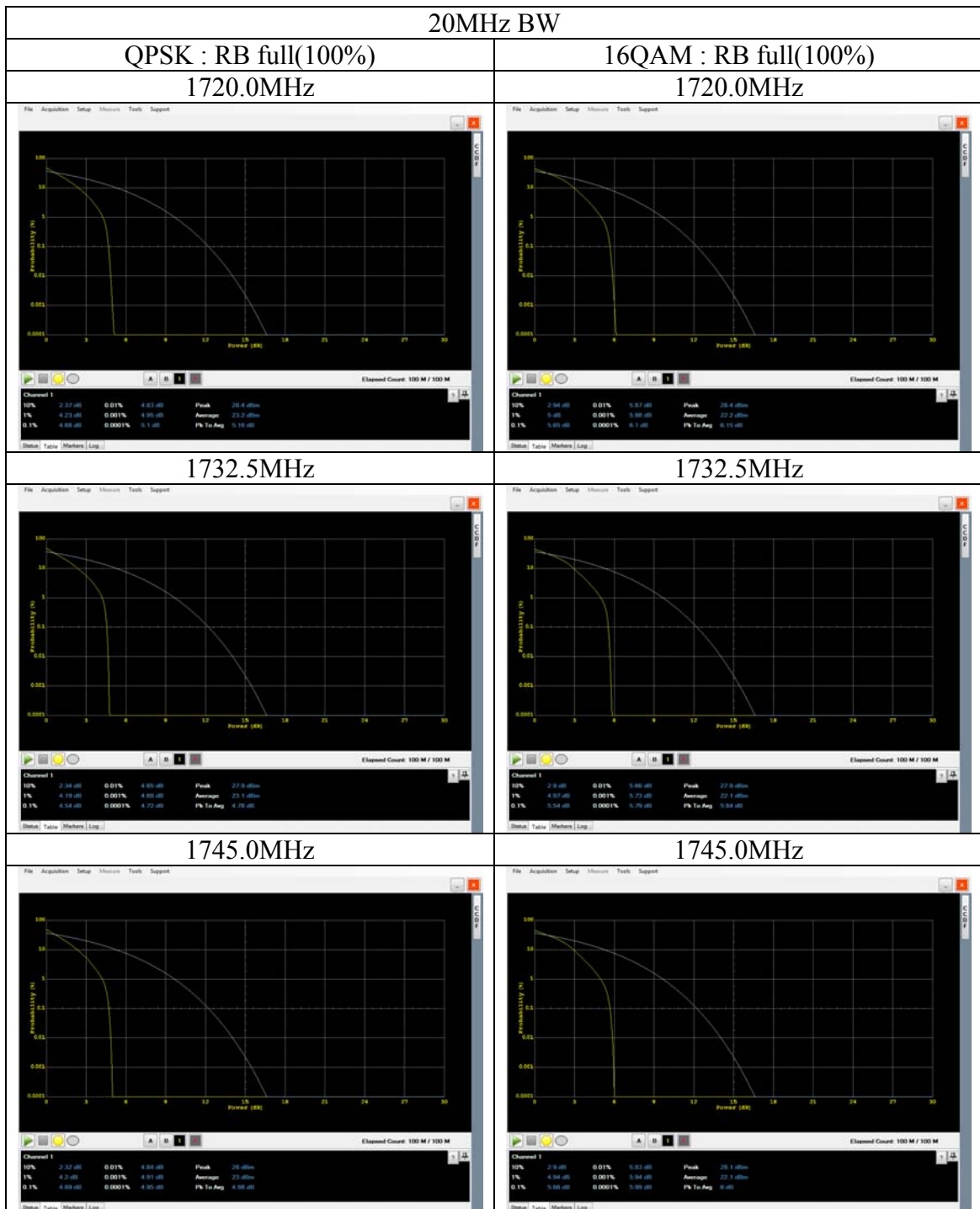
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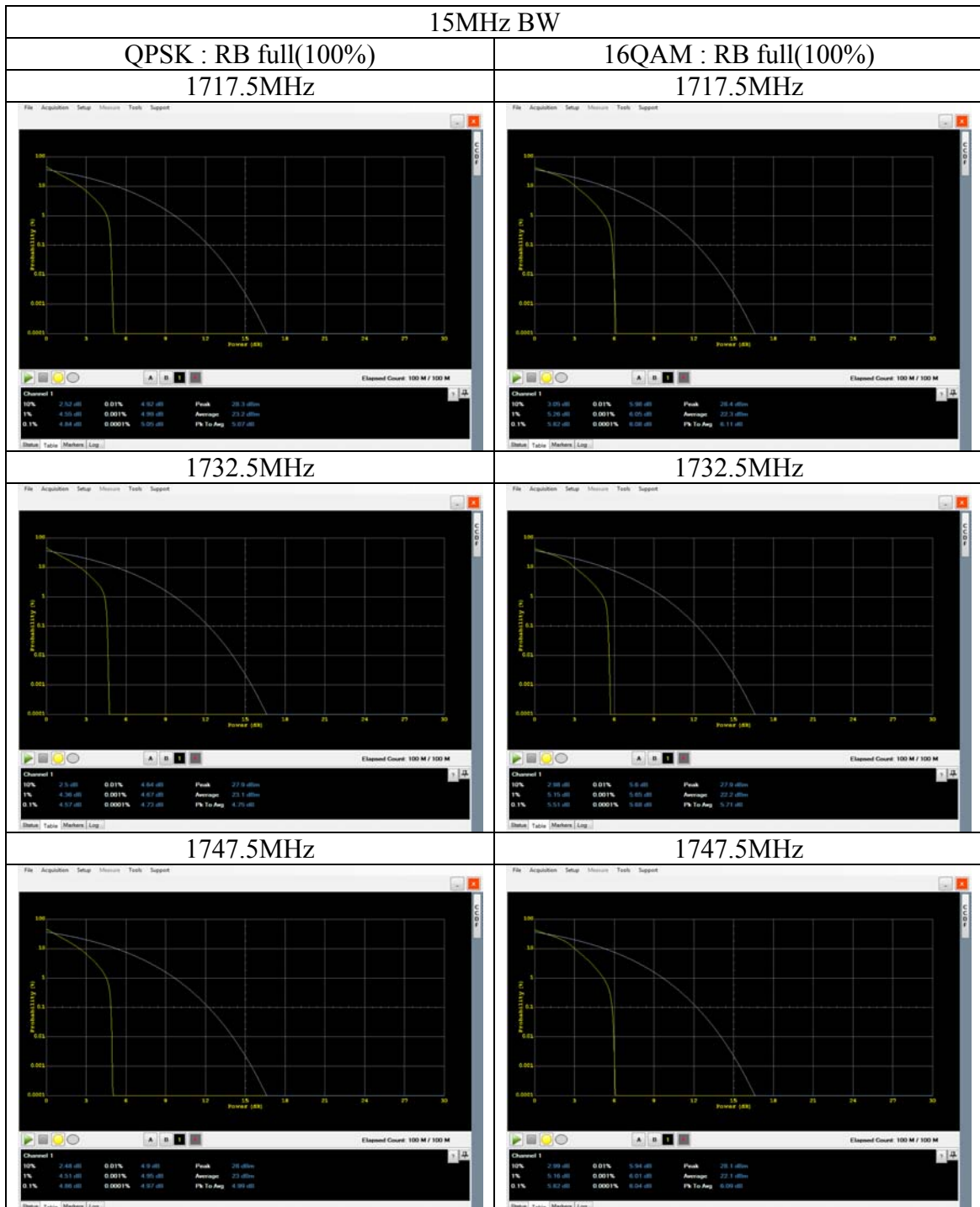
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Peak to Average power Ratio (Conducted) LTE Band IV

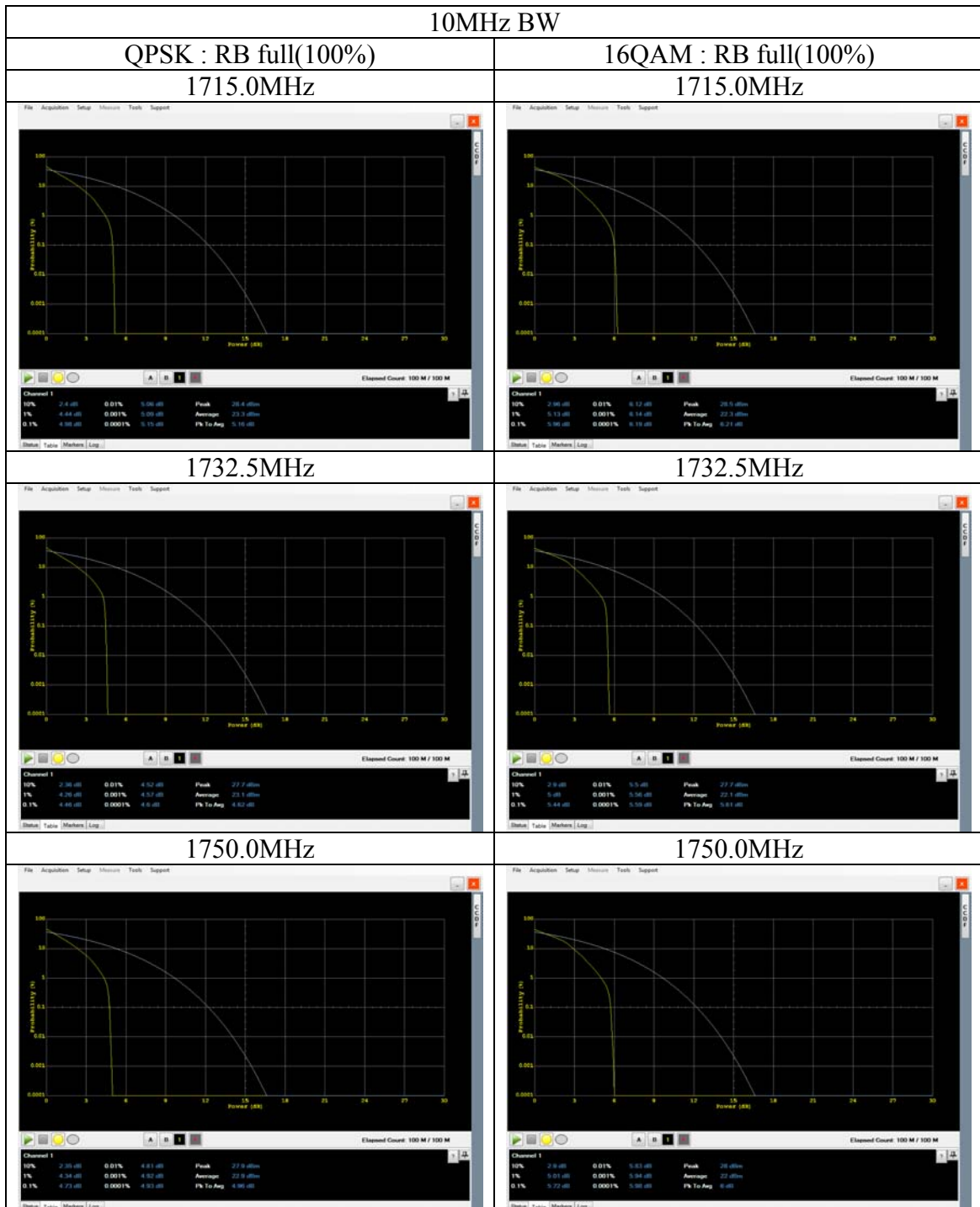


*Set the wideband power meter to CCDF measurement mode

Peak to Average power Ratio (Conducted) LTE Band IV



Peak to Average power Ratio (Conducted) LTE Band IV



*Set the wideband power meter to CCDF measurement mode

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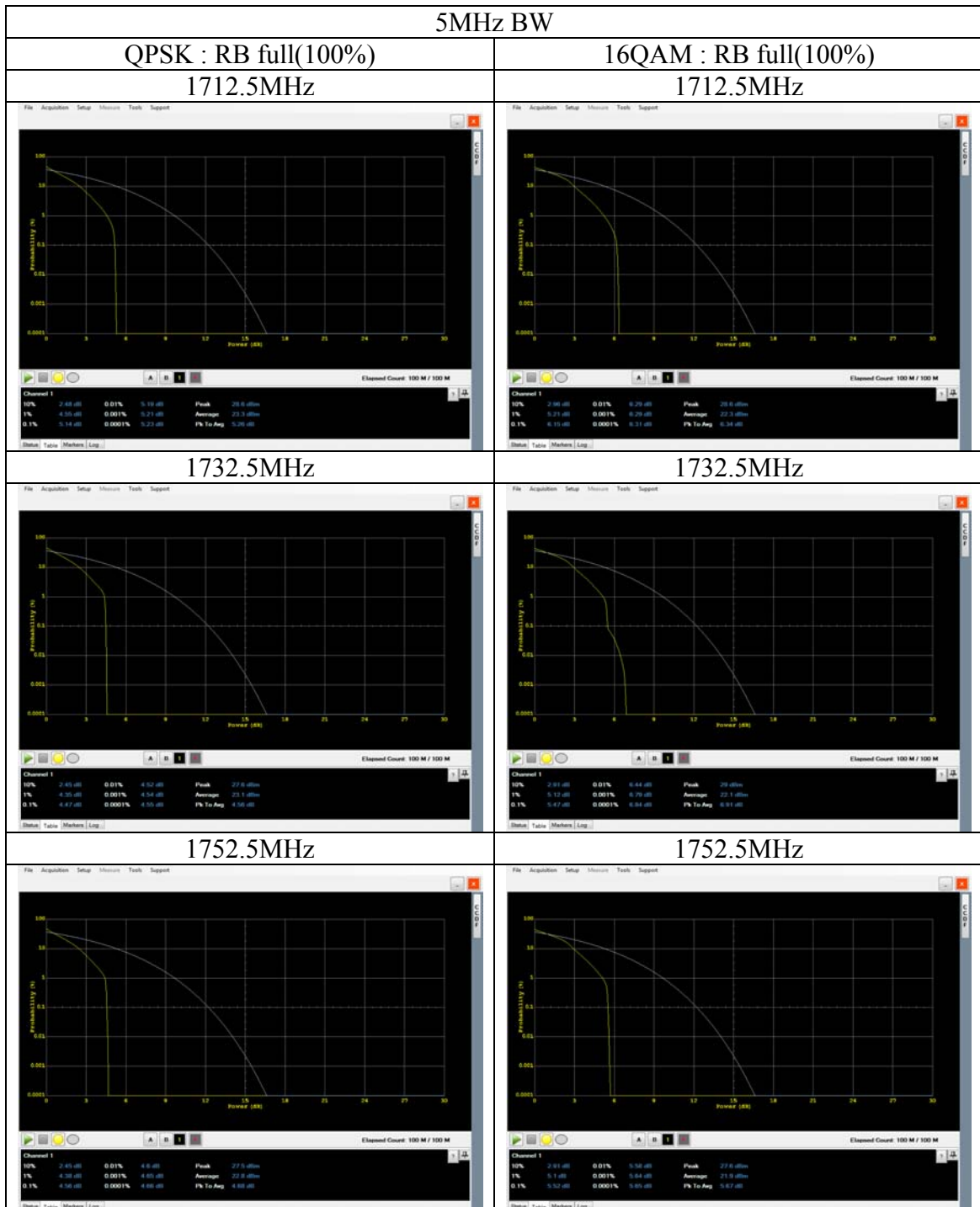
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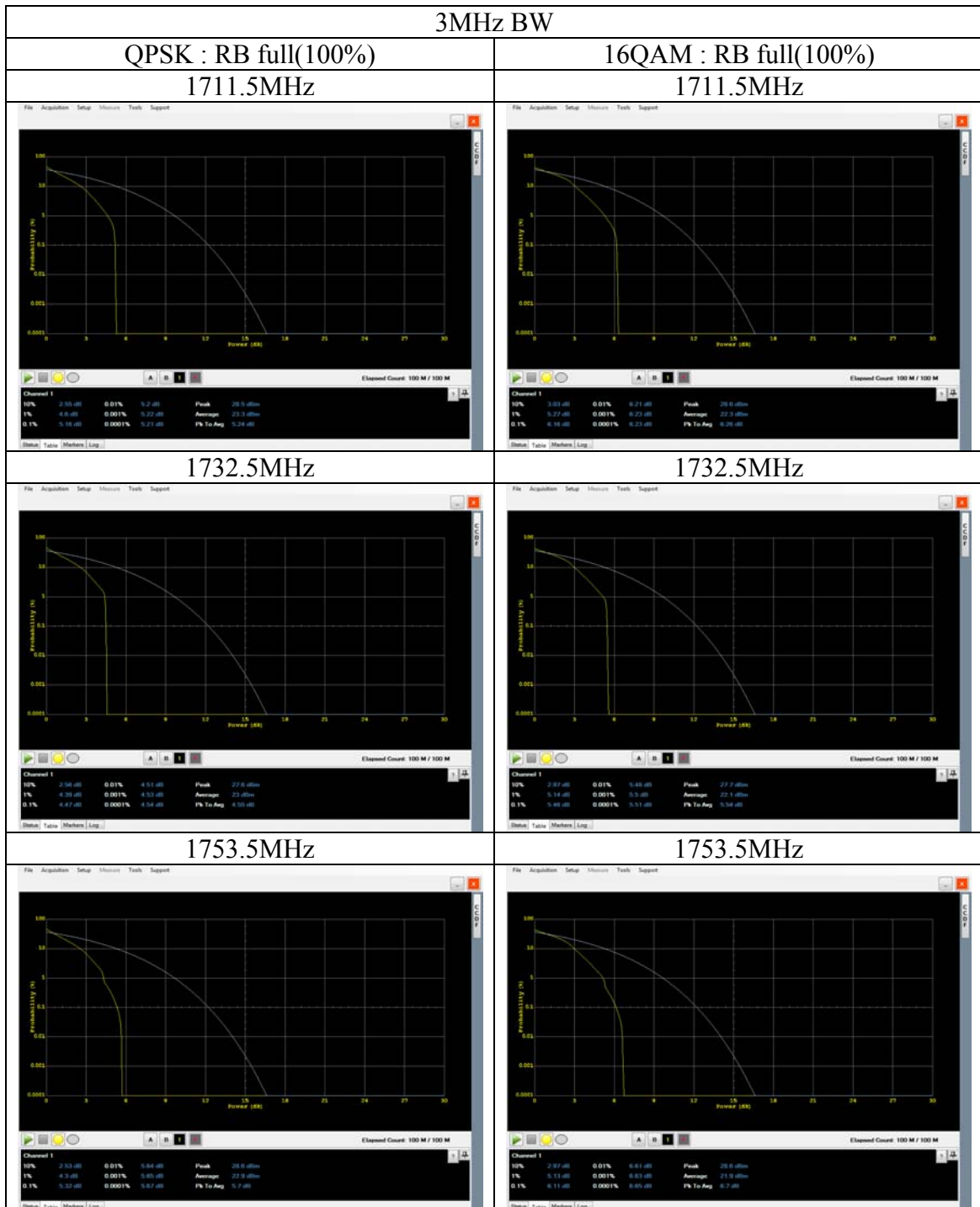
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Peak to Average power Ratio (Conducted) LTE Band IV



*Set the wideband power meter to CCDF measurement mode

Peak to Average power Ratio (Conducted) LTE Band IV



*Set the wideband power meter to CCDF measurement mode

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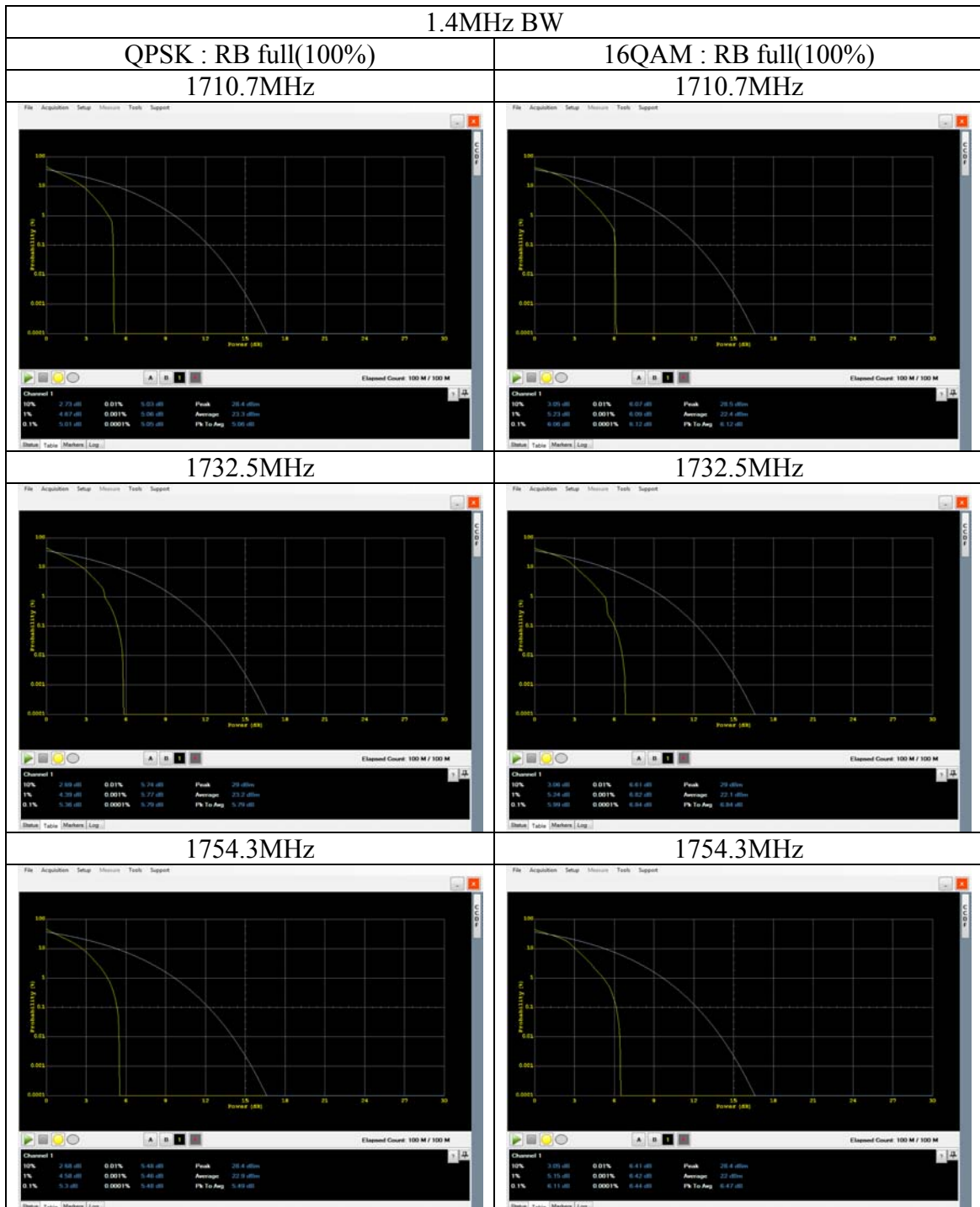
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Peak to Average power Ratio (Conducted) LTE Band IV



*Set the wideband power meter to CCDF measurement mode

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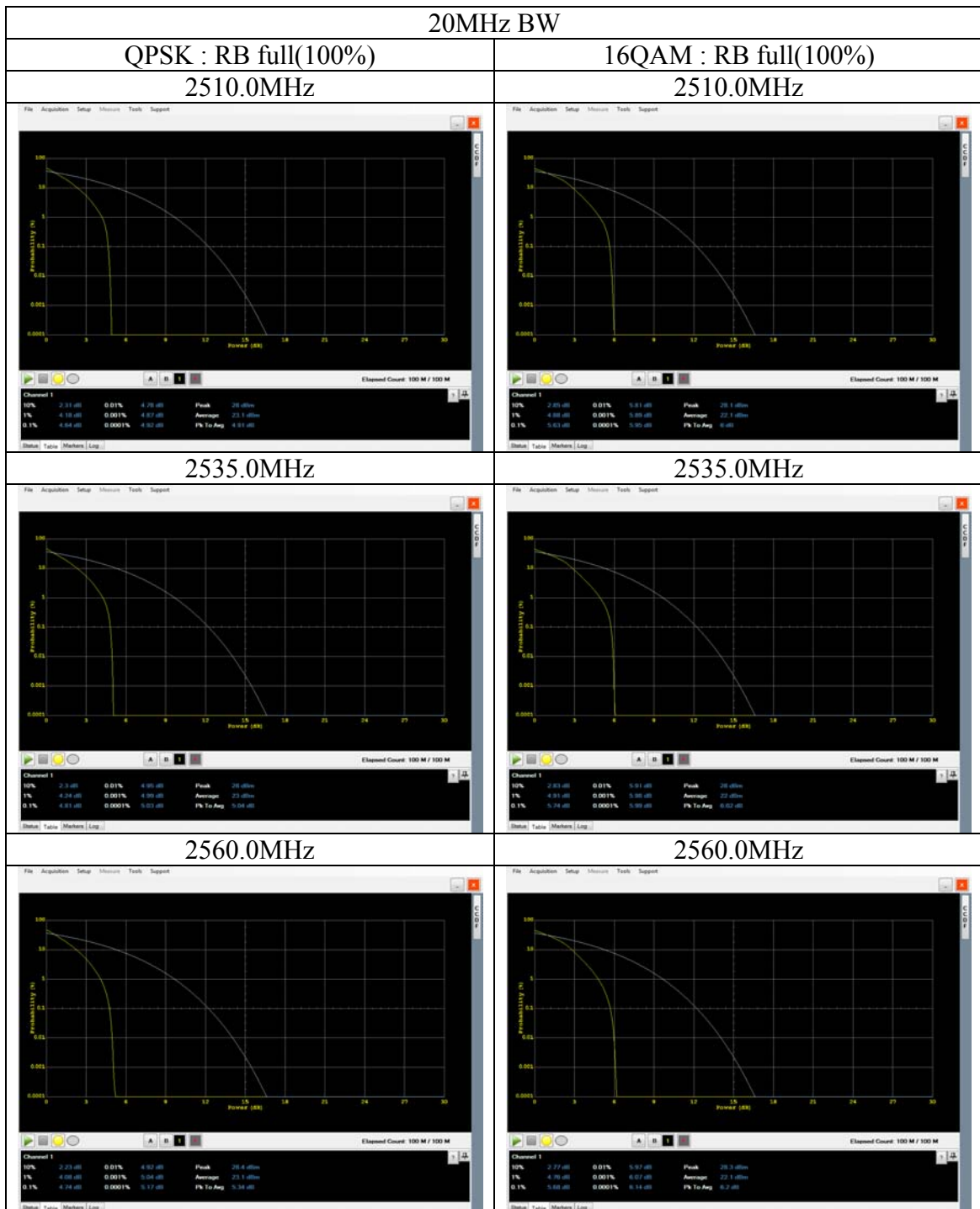
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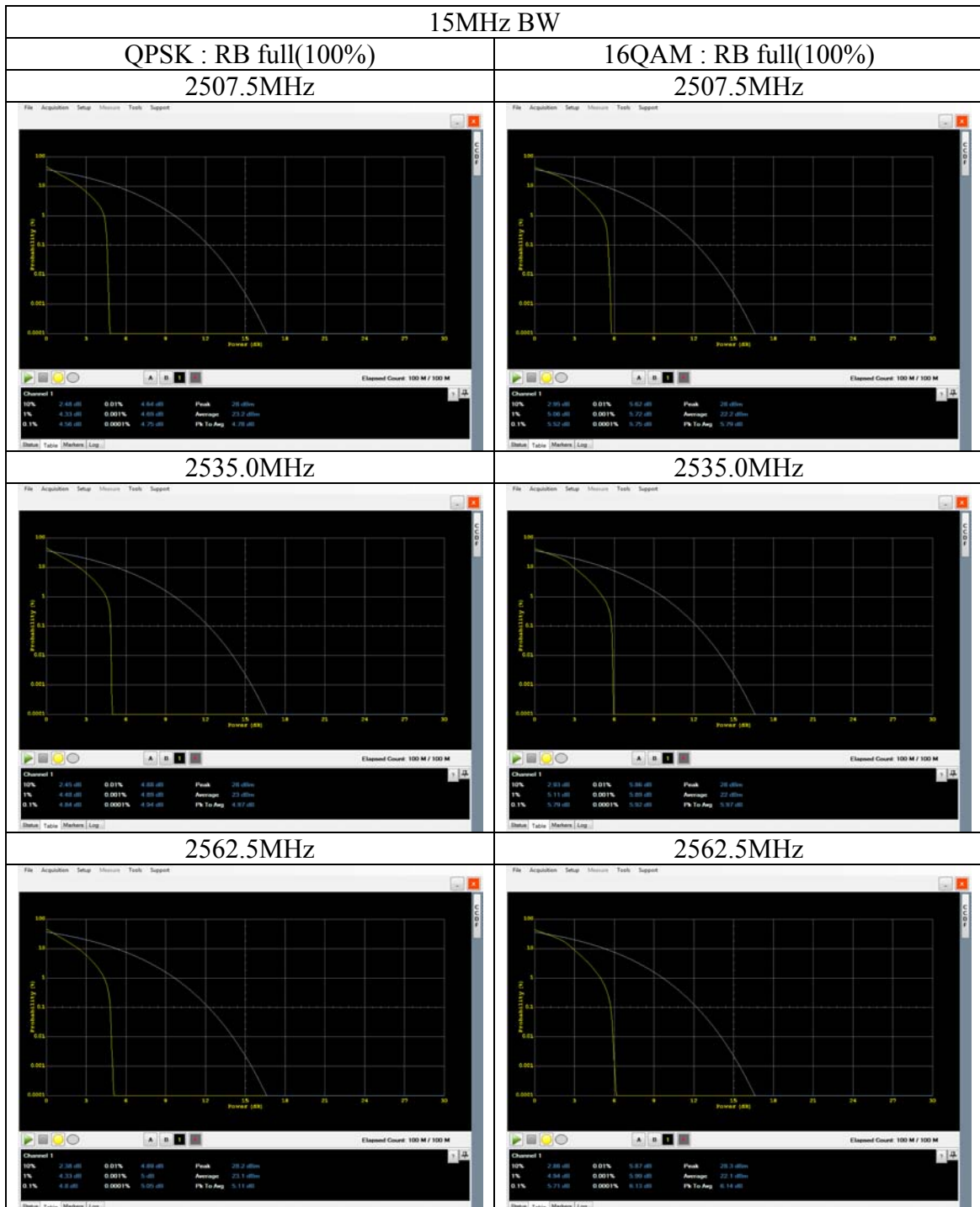
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Peak to Average power Ratio (Conducted)
LTE Band VII



*Set the wideband power meter to CCDF measurement mode

Peak to Average power Ratio (Conducted) LTE Band VII



*Set the wideband power meter to CCDF measurement mode

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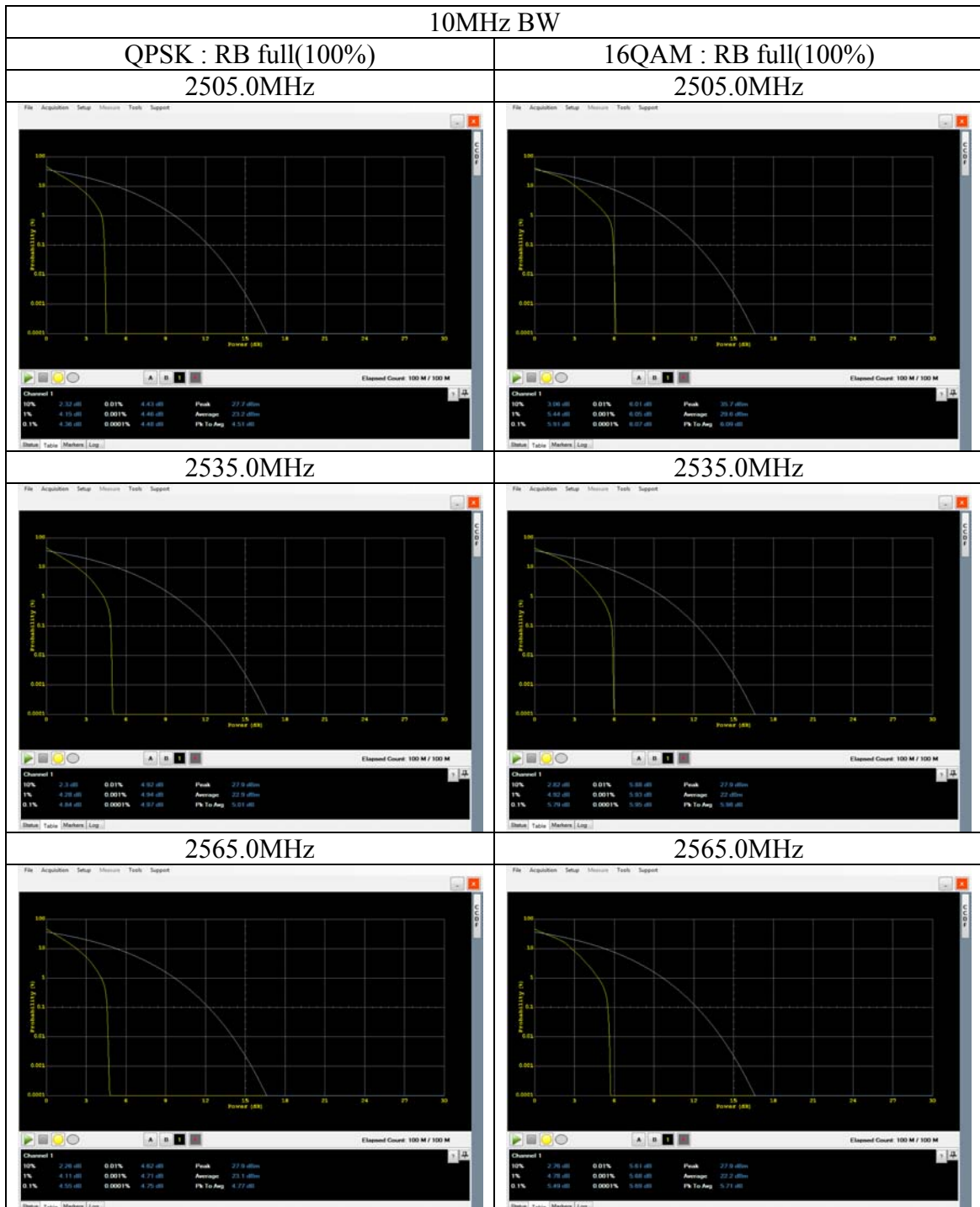
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Peak to Average power Ratio (Conducted) LTE Band VII



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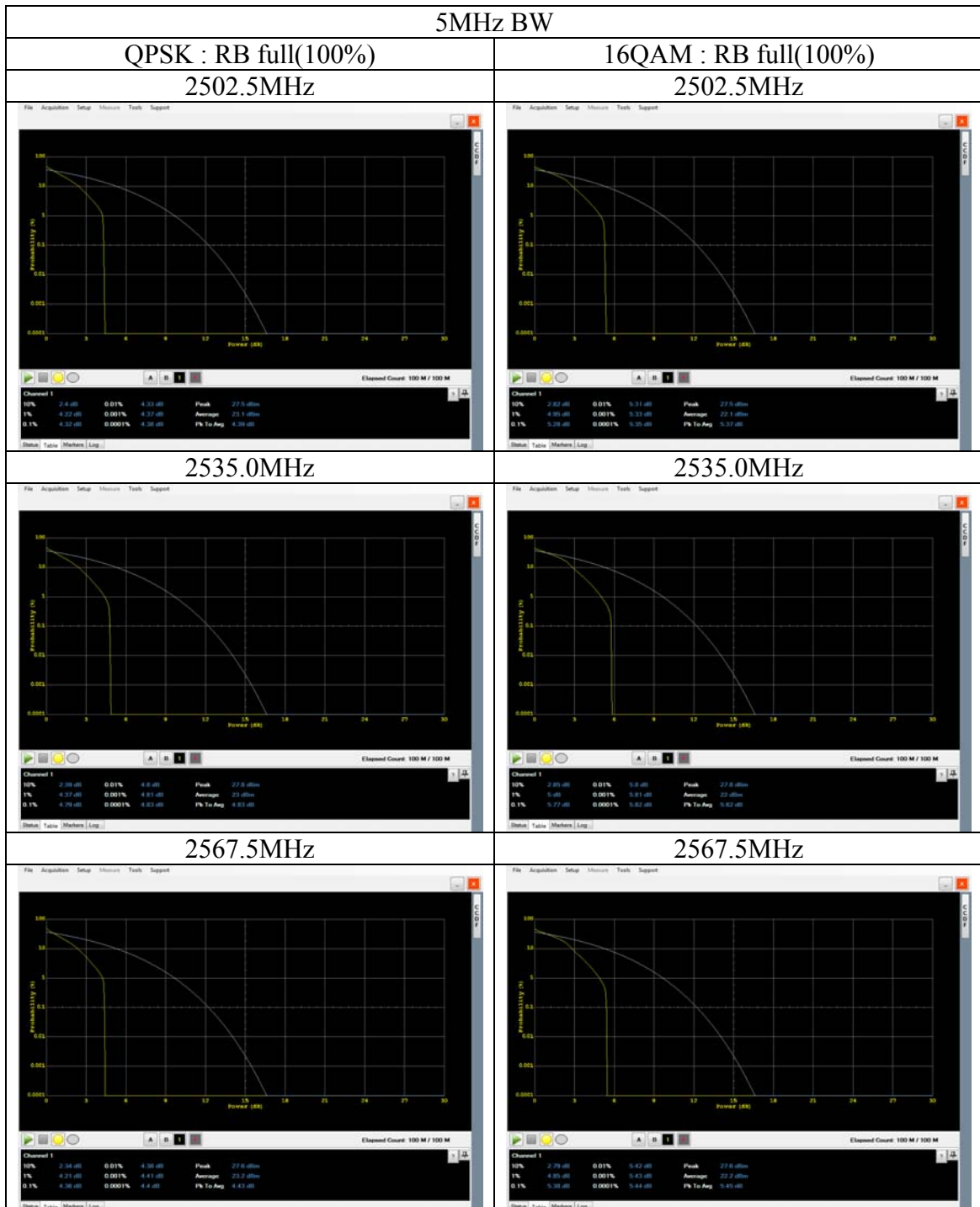
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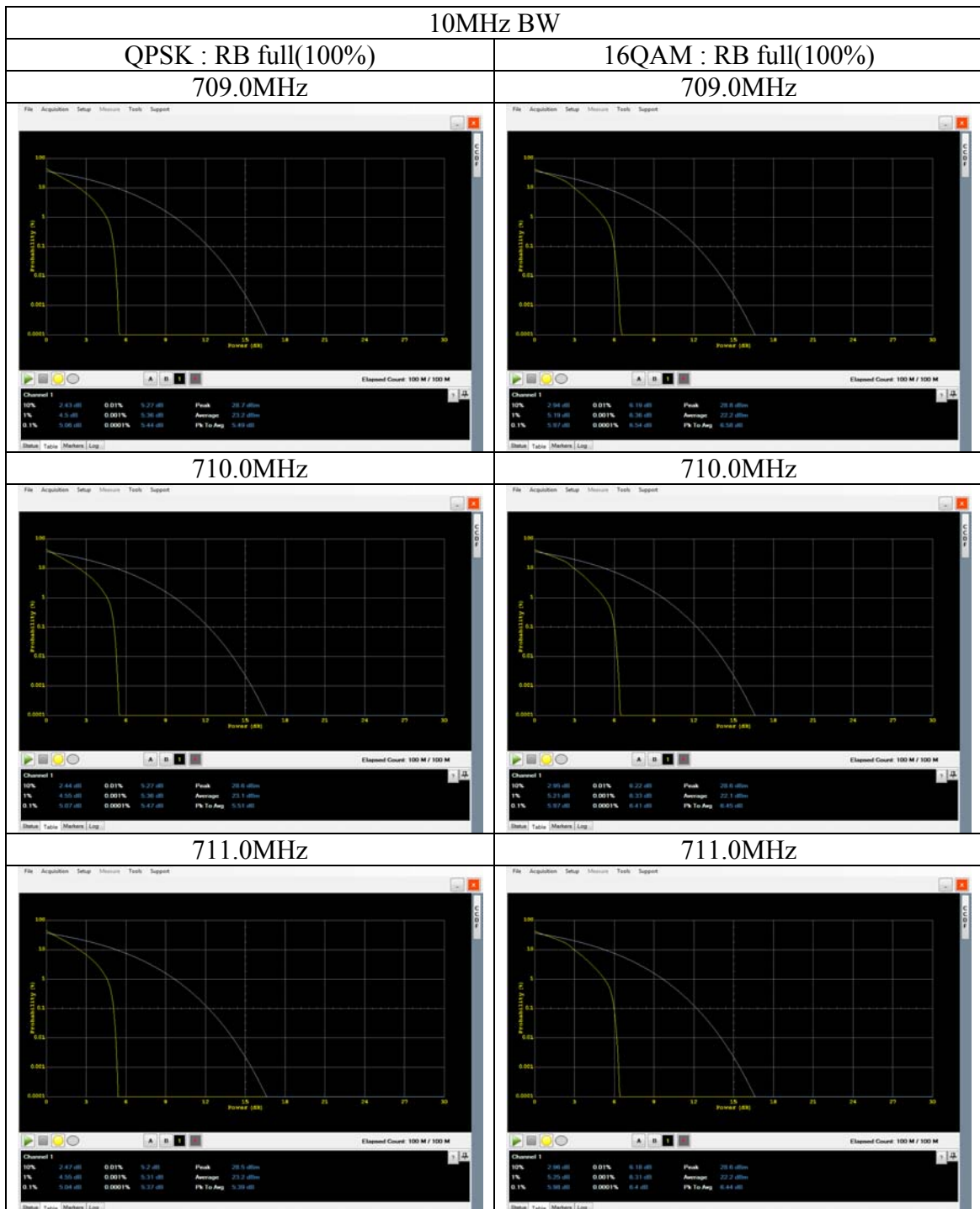
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Peak to Average power Ratio (Conducted) LTE Band VII



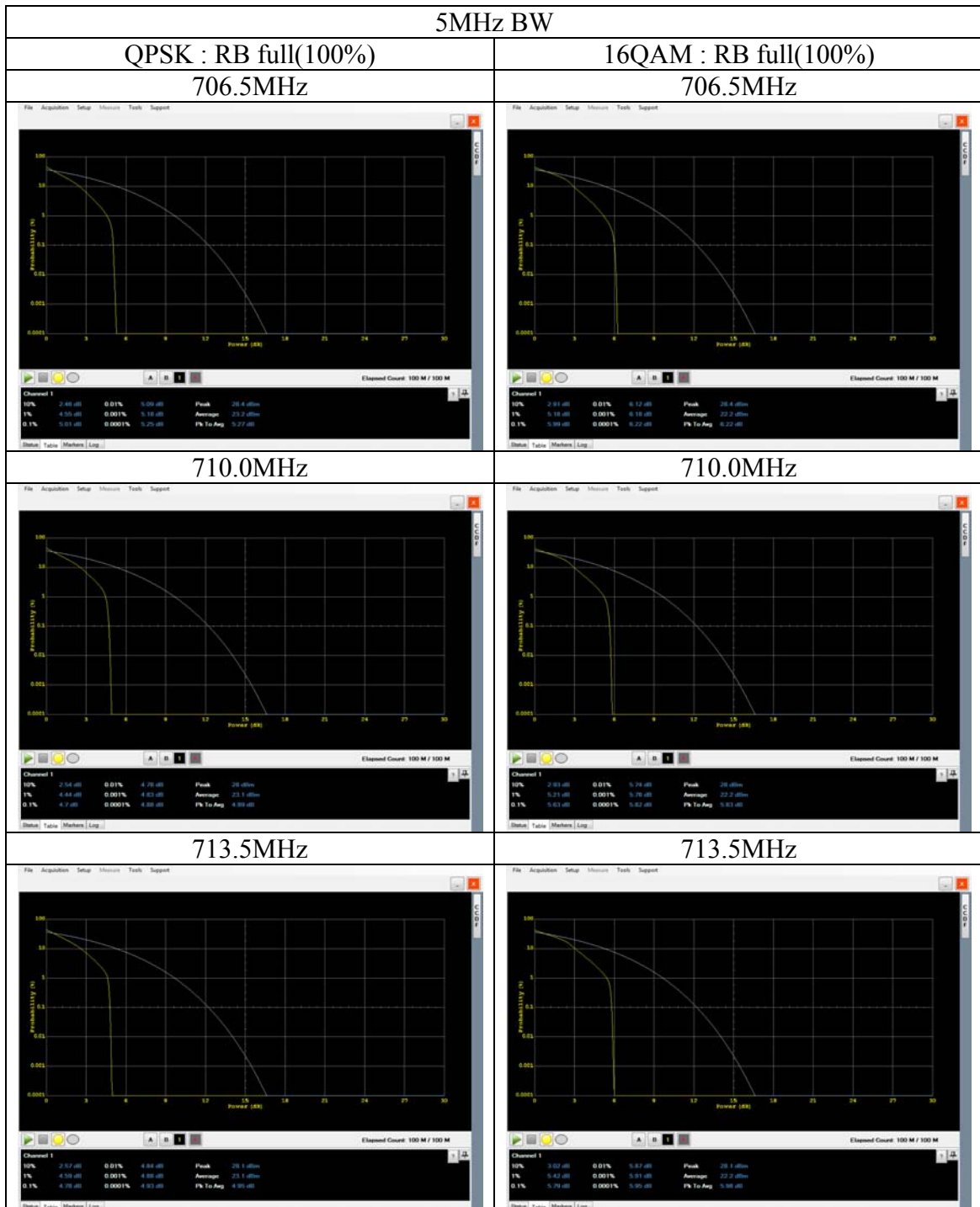
*Set the wideband power meter to CCDF measurement mode

Peak to Average power Ratio (Conducted)
LTE Band XVII



*Set the wideband power meter to CCDF measurement mode

Peak to Average power Ratio (Conducted) LTE Band XVII



*Set the wideband power meter to CCDF measurement mode

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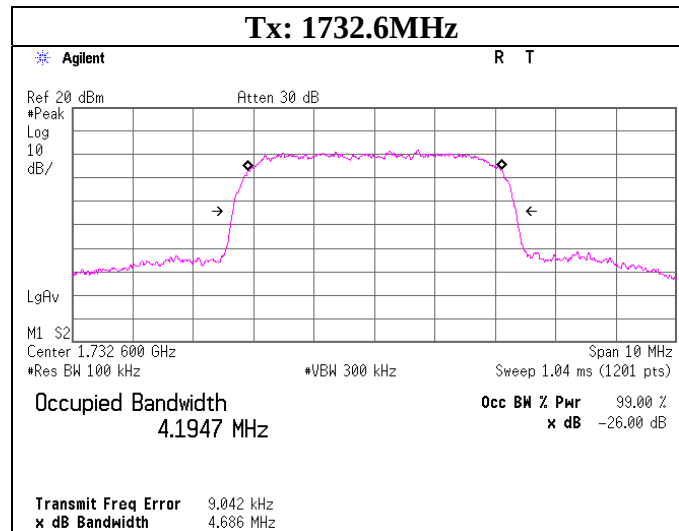
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Bandwidth(Conducted) W-CDMA Band IV

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	02/05/2015
Temperature/ Humidity	21deg. C / 34% RH
Engineer	Yutaka Yoshida
Mode	Tx W-CDMA(RMC12.2kbps), All Up Bits

CH	FREQ	26dB Bandwidth	99% OBW	Limit
	[MHz]	[MHz]	[MHz]	[kHz]
Mid	1732.6	4.686	4.1947	-



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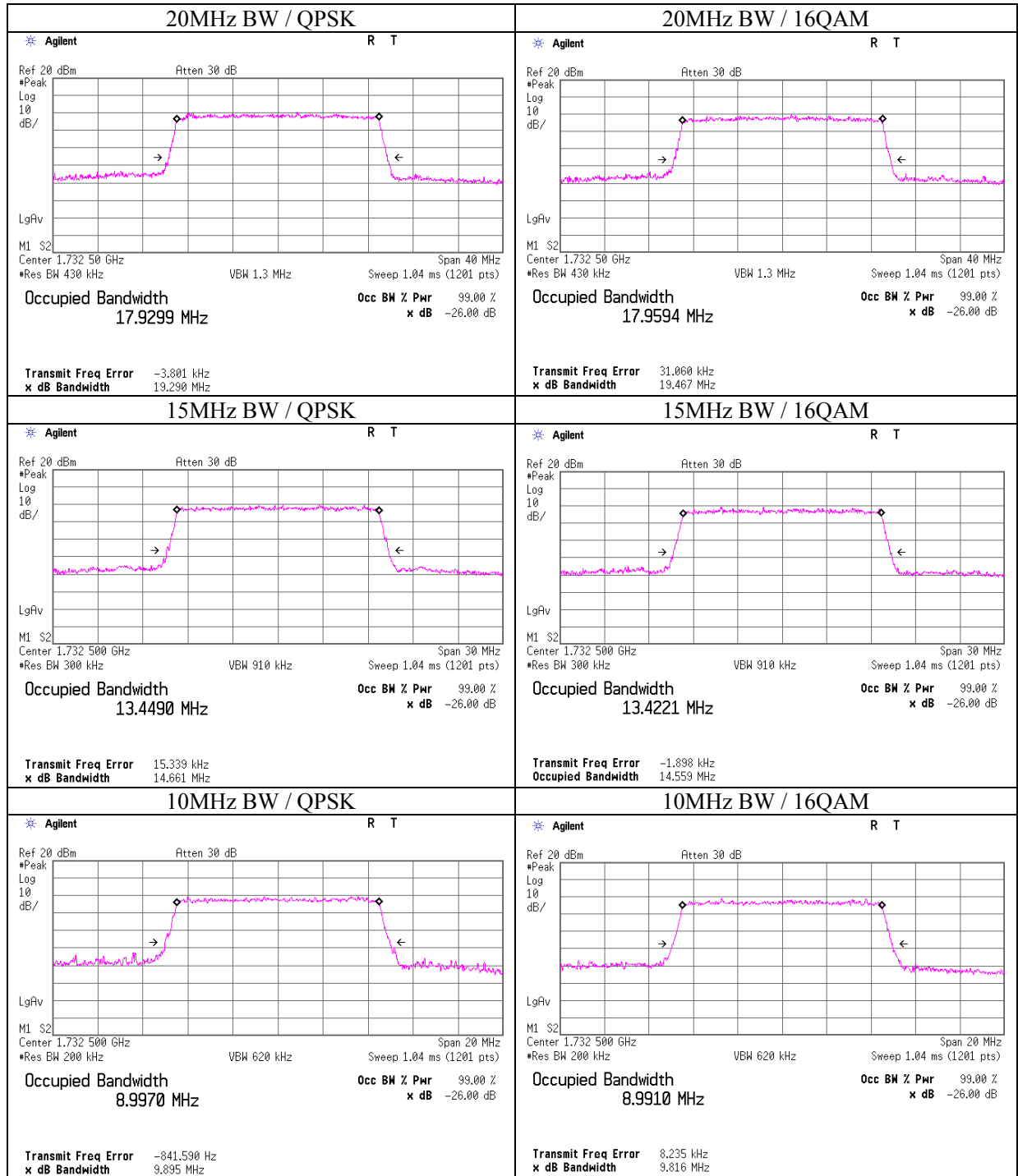
Facsimile : +81 596 24 8124

Bandwidth(Conducted)
LTE Band IV

Report No. 10636726H
Test place Ise EMC Lab. No.6 Measurement Room
Date 01/27/2015
Temperature / Humidity 20 deg. C / 49 % RH
Engineer Yutaka Yoshida
Mode Tx LTE
(QPSK / 16QAM)

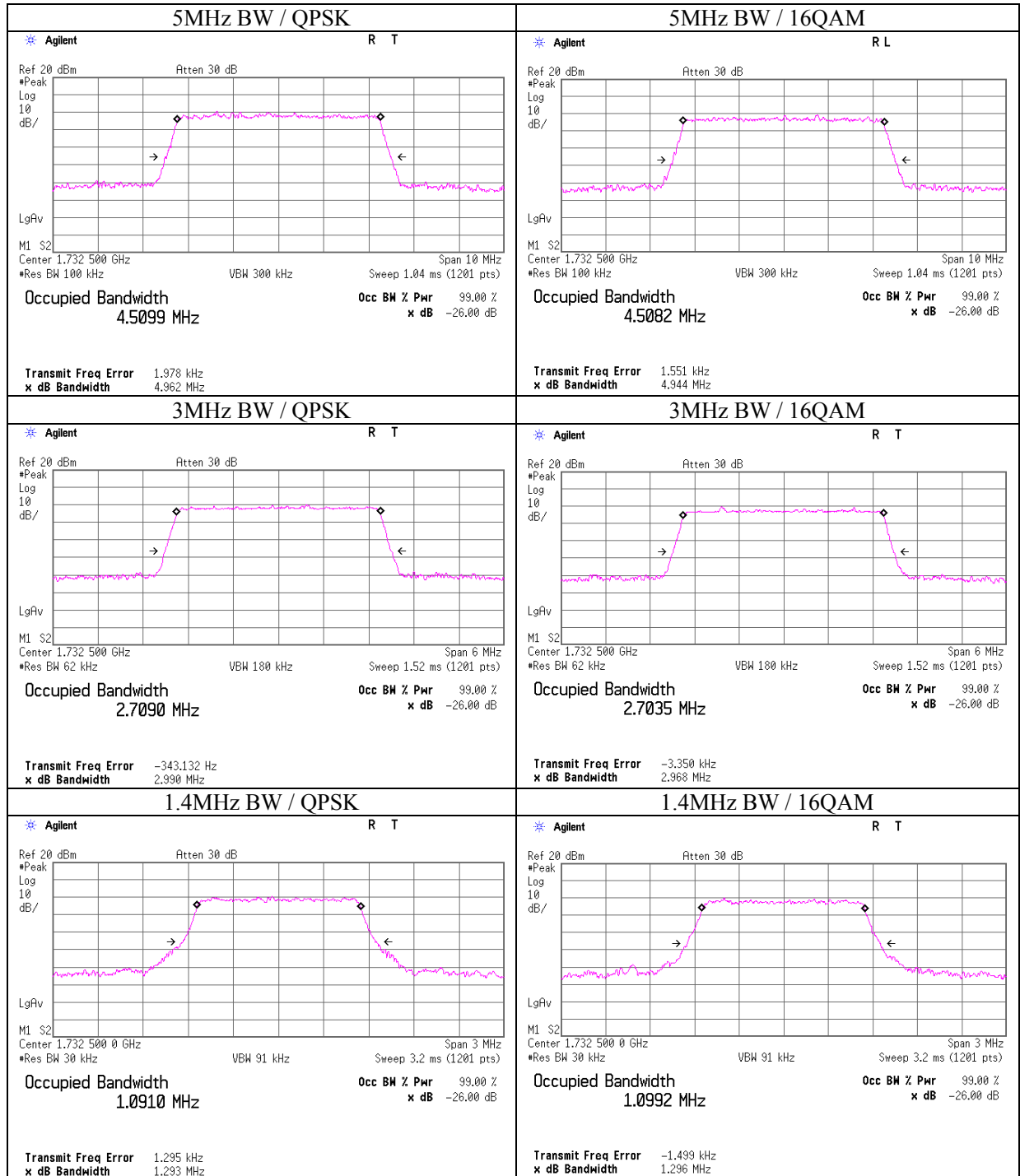
BW	UL RB Allocation	UL RB Start	Frequency [MHz]	Mode	26dB Bandwidth [MHz]	99% OBW [MHz]
20MHz	100	0	1732.5	QPSK	19.290	17.9299
				16QAM	19.467	17.9594
15MHz	75	0	1732.5	QPSK	14.661	13.4490
				16QAM	14.559	13.4221
10MHz	50	0	1732.5	QPSK	9.895	8.9970
				16QAM	9.816	8.9910
5MHz	25	0	1732.5	QPSK	4.962	4.5099
				16QAM	4.944	4.5082
3MHz	15	0	1732.5	QPSK	2.990	2.7090
				16QAM	2.968	2.7035
1.4MHz	6	0	1732.5	QPSK	1.293	1.0910
				16QAM	1.296	1.0992

Bandwidth(Conducted) LTE Band IV



Bandwidth(Conducted)

LTE Band IV



Bandwidth(Conducted)
LTE Band VII

Report No. 10636726H
Test place Ise EMC Lab. No.6 Measurement Room
Date 01/27/2015
Temperature / Humidity 20 deg. C / 49 % RH
Engineer Yutaka Yoshida
Mode Tx LTE
(QPSK / 16QAM)

BW	UL RB Allocation	UL RB Start	Frequency [MHz]	Mode	26dB Bandwidth [MHz]	99% OBW [MHz]
20MHz	100	0	2535.0	QPSK	19.261	17.8989
				16QAM	19.384	17.9242
15MHz	75	0	2535.0	QPSK	14.610	13.4334
				16QAM	14.658	13.4290
10MHz	50	0	2535.0	QPSK	9.865	8.9959
				16QAM	9.837	8.9886
5MHz	25	0	2535.0	QPSK	4.977	4.5176
				16QAM	4.989	4.5140

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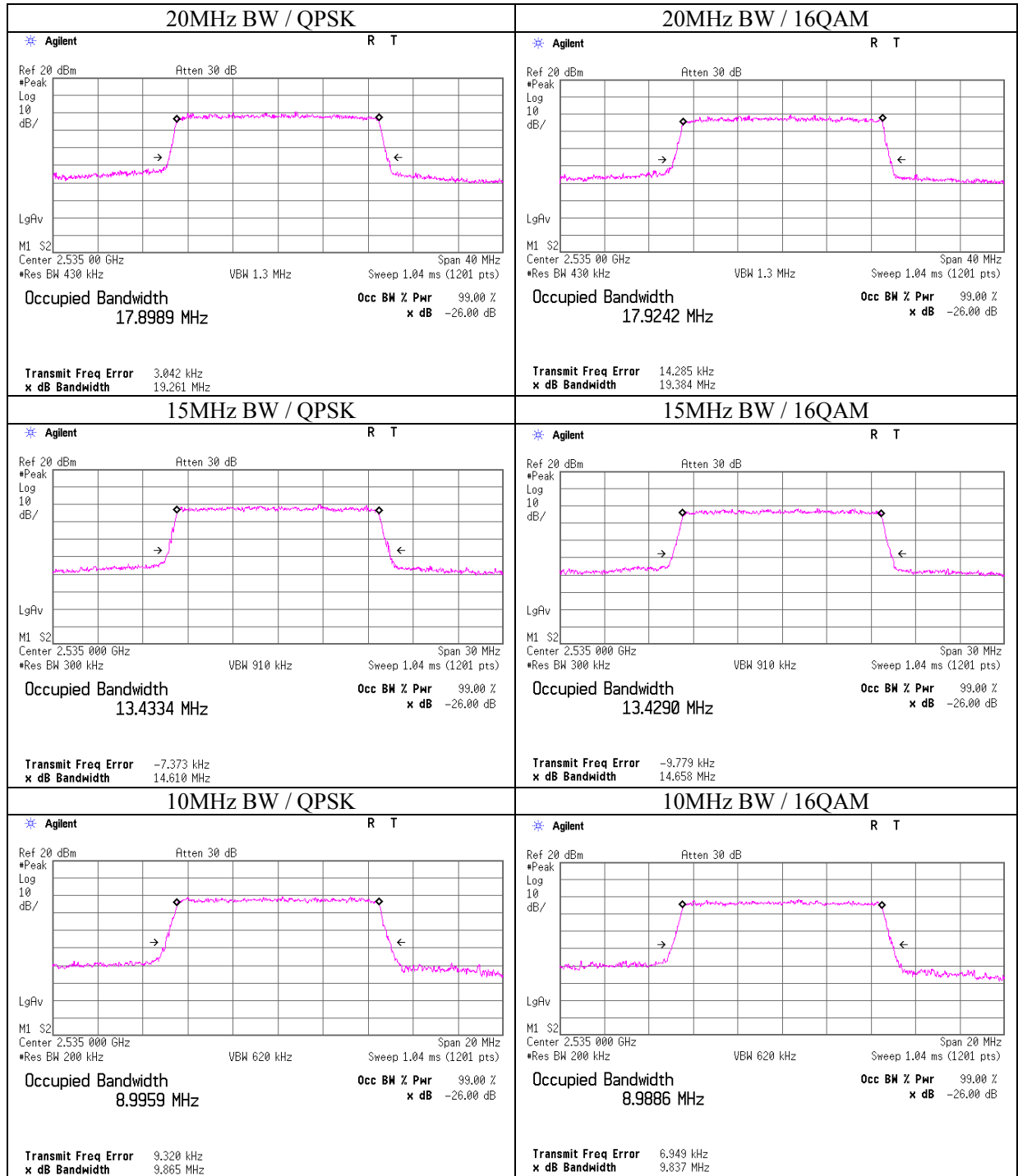
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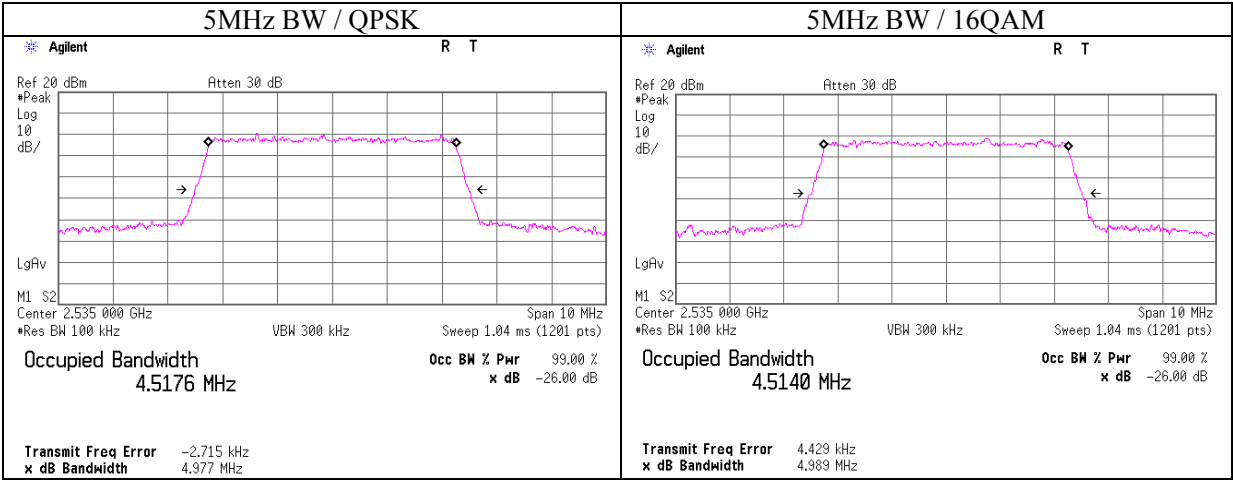
Facsimile : +81 596 24 8124

Bandwidth(Conducted) LTE Band VII



Bandwidth(Conducted)

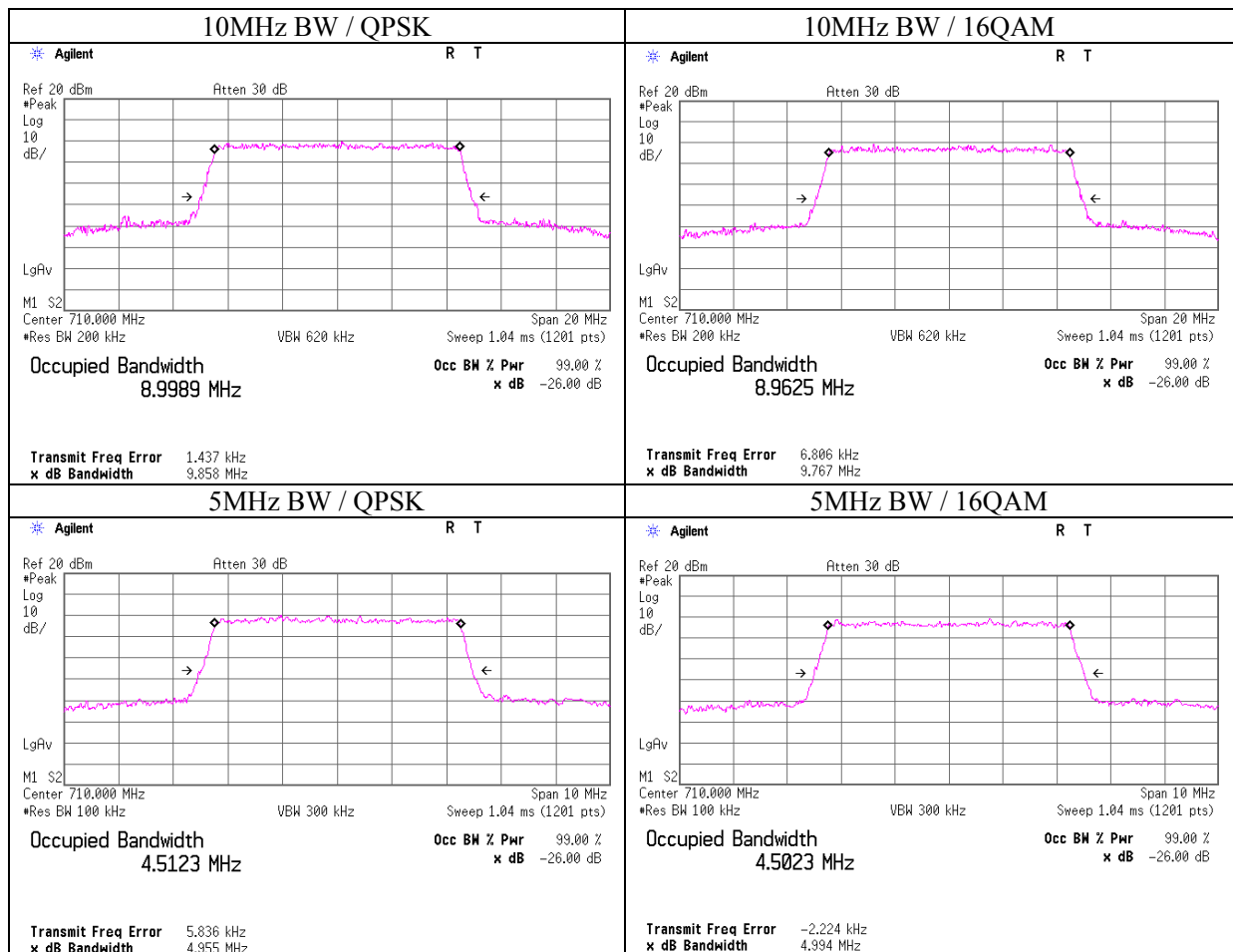
LTE Band VII



Bandwidth(Conducted) LTE Band XVII

Report No. 10636726H
Test place Ise EMC Lab. No.6 Measurement Room
Date 01/27/2015
Temperature / Humidity 20 deg. C / 49 % RH
Engineer Yutaka Yoshida
Mode Tx LTE
(QPSK / 16QAM)

BW	UL RB Allocation	UL RB Start	Frequency [MHz]	Mode	26dB Bandwidth [MHz]	99% OBW [MHz]
10MHz	50	0	710.0	QPSK	9.858	8.9989
				16QAM	9.767	8.9625
5MHz	25	0	710.0	QPSK	4.955	4.5123
				16QAM	4.994	4.5023



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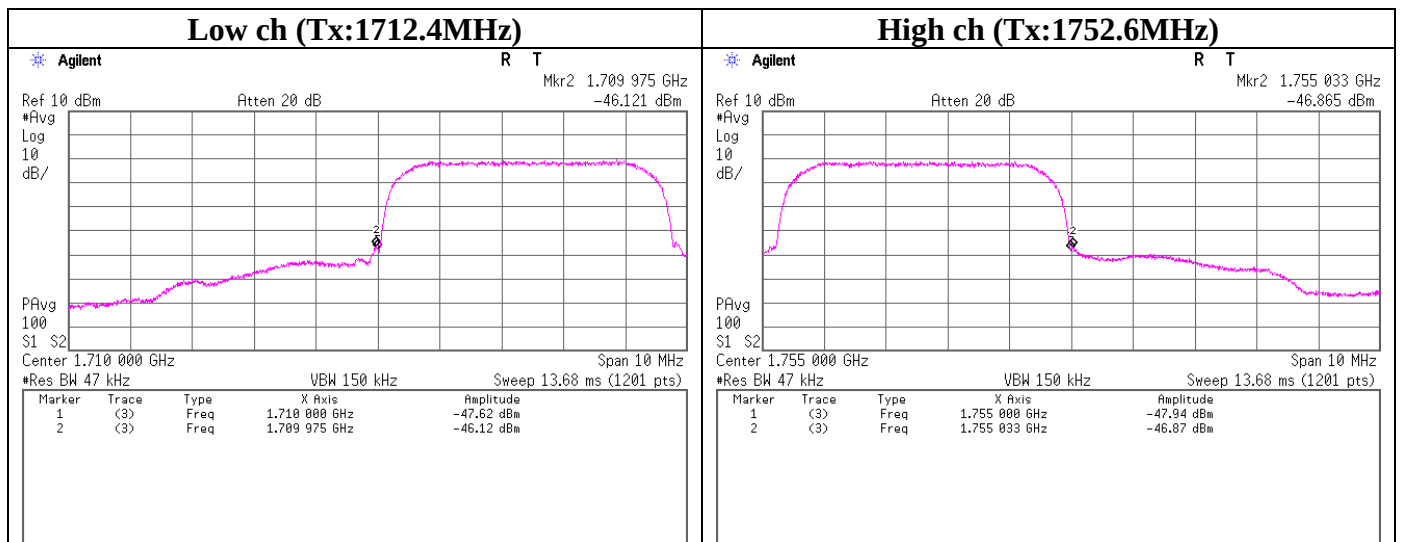
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Band-Edge(Conducted)

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	02/05/2015
Temperature/ Humidity	21deg.C / 34% RH
Engineer	Yutaka Yoshida
Mode	Tx W-CDMA(RMC12.2kbps), All Up Bits

Frequency [MHz]	Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
1709.975	-46.12	10.02	6.78	-29.32	-13.0	16.32
1710.000	-47.62	10.02	6.78	-30.82	-13.0	17.82
1755.000	-47.94	10.02	6.79	-31.13	-13.0	18.13
1755.033	-46.87	10.02	6.79	-30.06	-13.0	17.06

Sample Calculation : Result = Reading + Atten. + Cable Loss



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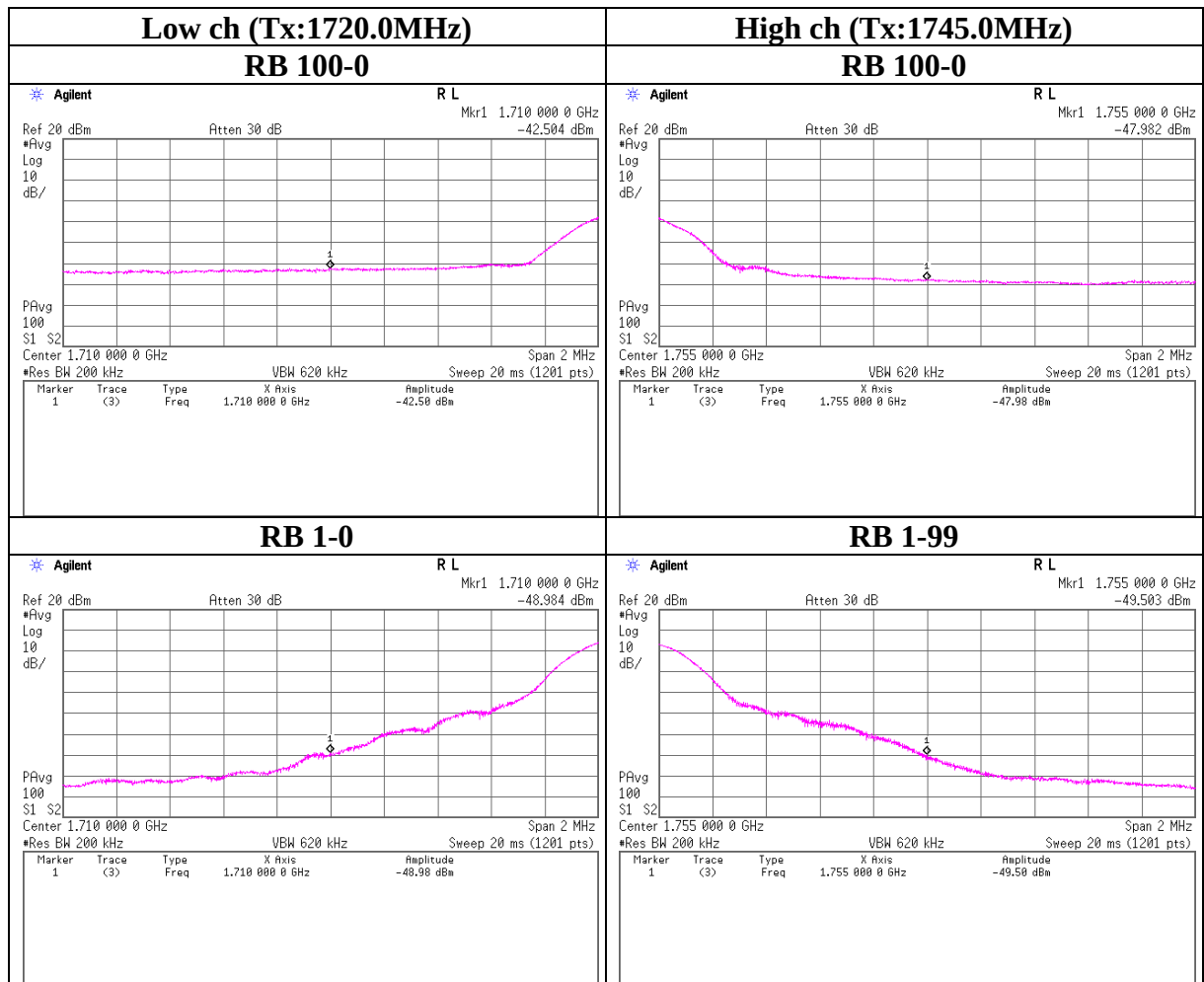
Band-Edge(Conducted)

LTE Band IV

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/30/2015
Temperature/ Humidity	17deg.C / 40% RH
Engineer	Yutaka Yoshida
Mode	Tx LTE(QPSK), BW 20MHz

RB Size	RB Start	Frequency [MHz]	Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
100	0	1710.00	-42.50	10.02	6.78	-25.70	-13.0	12.70
	0	1755.00	-47.98	10.02	6.79	-31.17	-13.0	18.17
1	0	1710.00	-48.98	10.02	6.78	-32.18	-13.0	19.18
	99	1755.00	-49.50	10.02	6.79	-32.69	-13.0	19.69

Sample Calculation : Result = Reading + Atten. + Cable Loss



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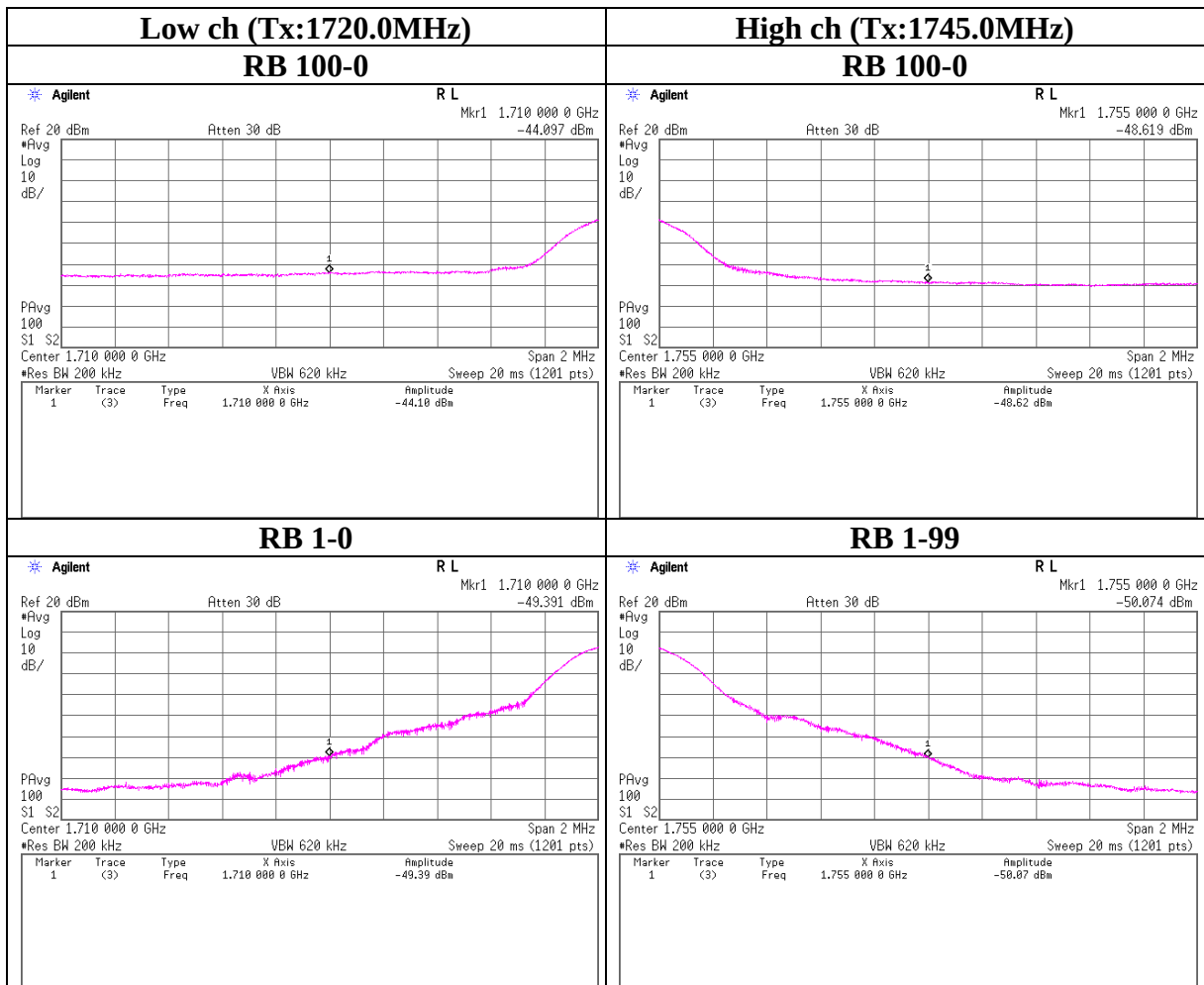
Facsimile : +81 596 24 8124

Band-Edge(Conducted) LTE Band IV

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/30/2015
Temperature/ Humidity	17deg.C / 40% RH
Engineer	Yutaka Yoshida
Mode	Tx LTE(16QAM), BW 20MHz

RB Size	RB Start	Frequency [MHz]	Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
100	0	1710.00	-44.10	10.02	6.78	-27.30	-13.0	14.30
	0	1755.00	-48.62	10.02	6.79	-31.81	-13.0	18.81
1	0	1710.00	-49.39	10.02	6.78	-32.59	-13.0	19.59
	99	1755.00	-50.07	10.02	6.79	-33.26	-13.0	20.26

Sample Calculation : Result = Reading + Atten. + Cable Loss



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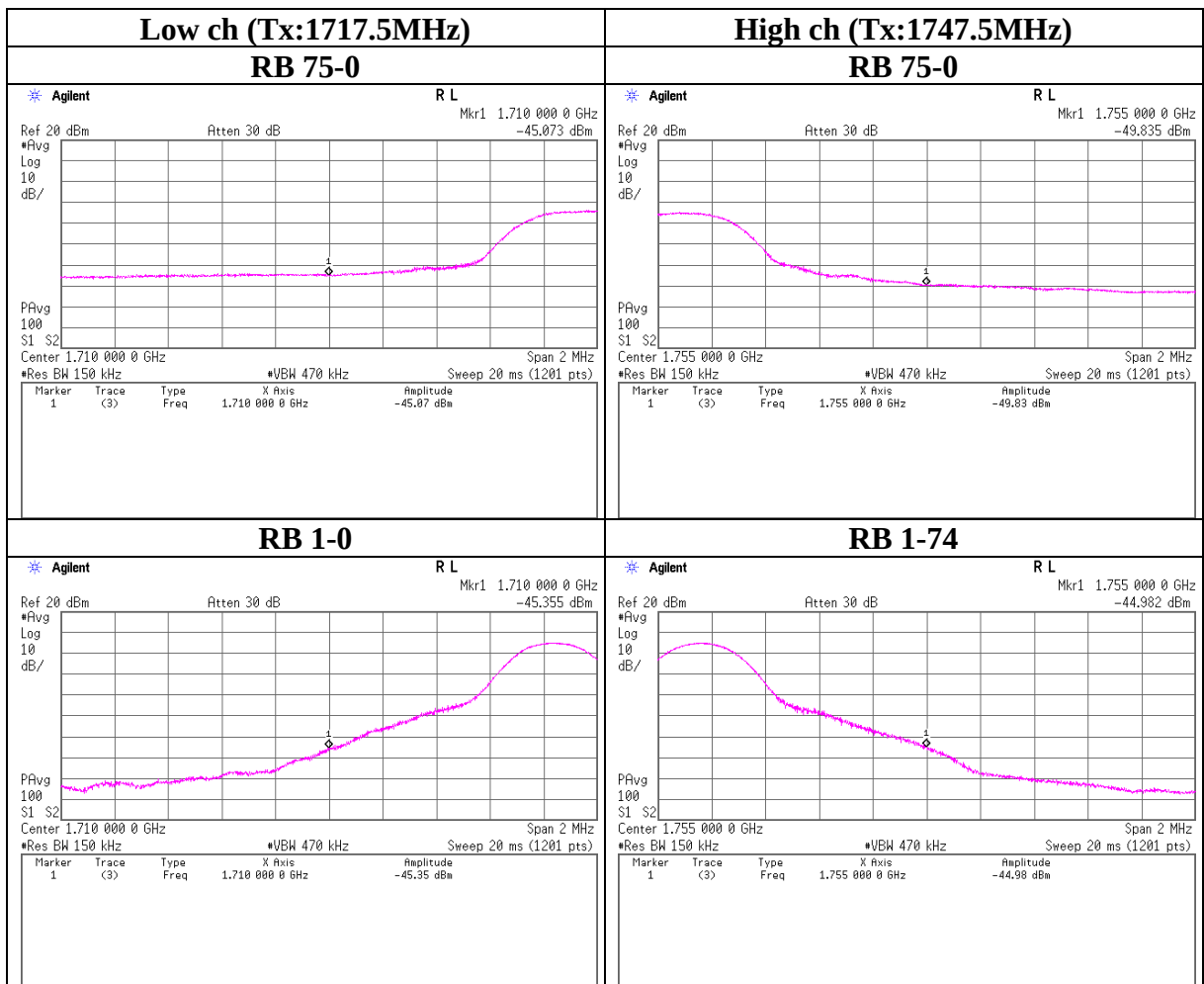
Facsimile : +81 596 24 8124

Band-Edge(Conducted) LTE Band IV

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/30/2015
Temperature/ Humidity	17deg.C / 40% RH
Engineer	Yutaka Yoshida
Mode	Tx LTE(QPSK), BW 15MHz

RB Size	RB Start	Frequency [MHz]	Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
75	0	1710.00	-45.07	10.02	6.78	-28.27	-13.0	15.27
	0	1755.00	-49.84	10.02	6.79	-33.03	-13.0	20.03
1	0	1710.00	-45.36	10.02	6.78	-28.56	-13.0	15.56
	74	1755.00	-44.98	10.02	6.79	-28.17	-13.0	15.17

Sample Calculation : Result = Reading + Atten. + Cable Loss



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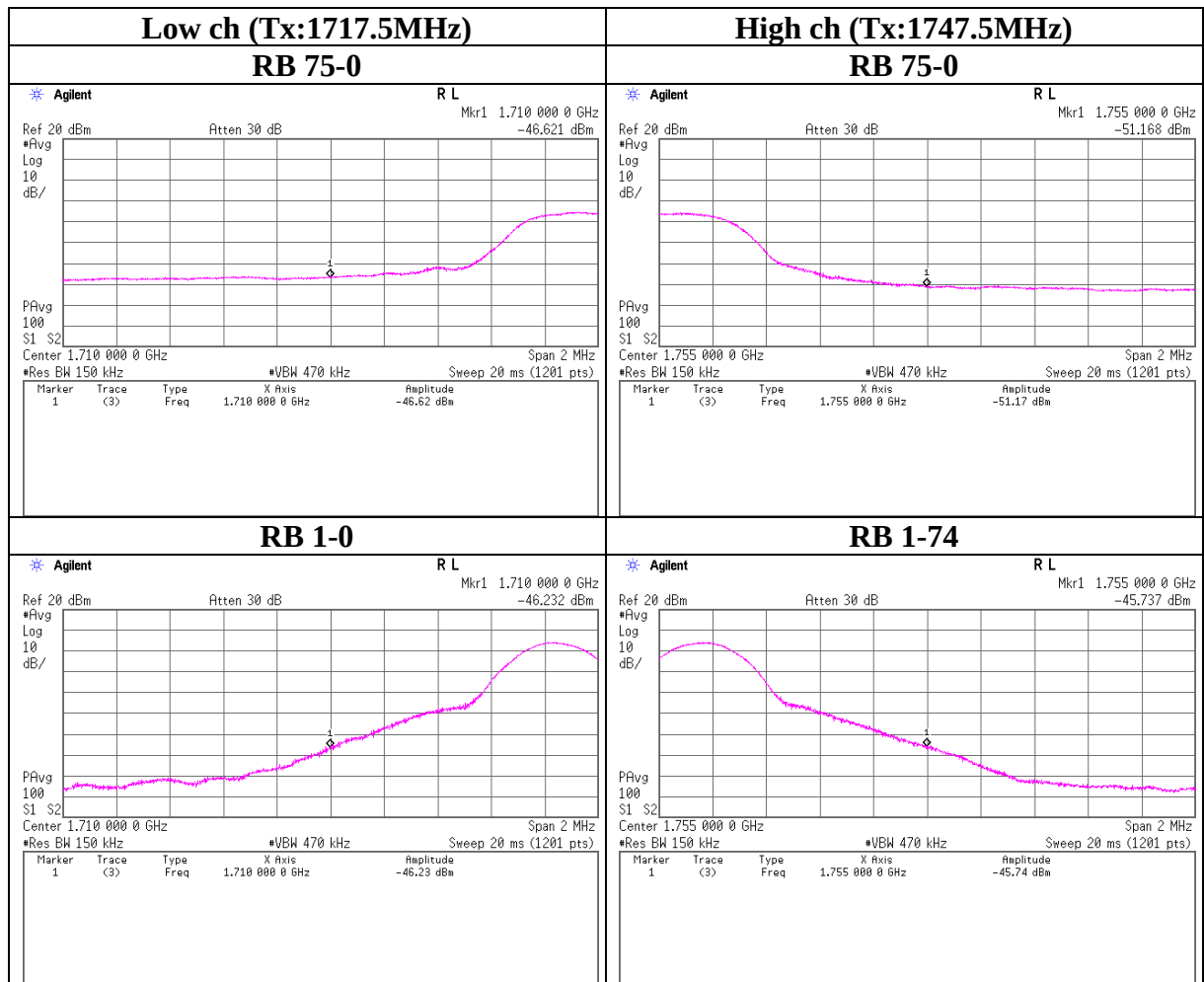
Band-Edge(Conducted)

LTE Band IV

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/30/2015
Temperature/ Humidity	17deg.C / 40% RH
Engineer	Yutaka Yoshida
Mode	Tx LTE(16QAM), BW 15MHz

RB Size	RB Start	Frequency [MHz]	Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
75	0	1710.00	-46.62	10.02	6.78	-29.82	-13.0	16.82
	0	1755.00	-51.17	10.02	6.79	-34.36	-13.0	21.36
1	0	1710.00	-46.23	10.02	6.78	-29.43	-13.0	16.43
	74	1755.00	-45.74	10.02	6.79	-28.93	-13.0	15.93

Sample Calculation : Result = Reading + Atten. + Cable Loss



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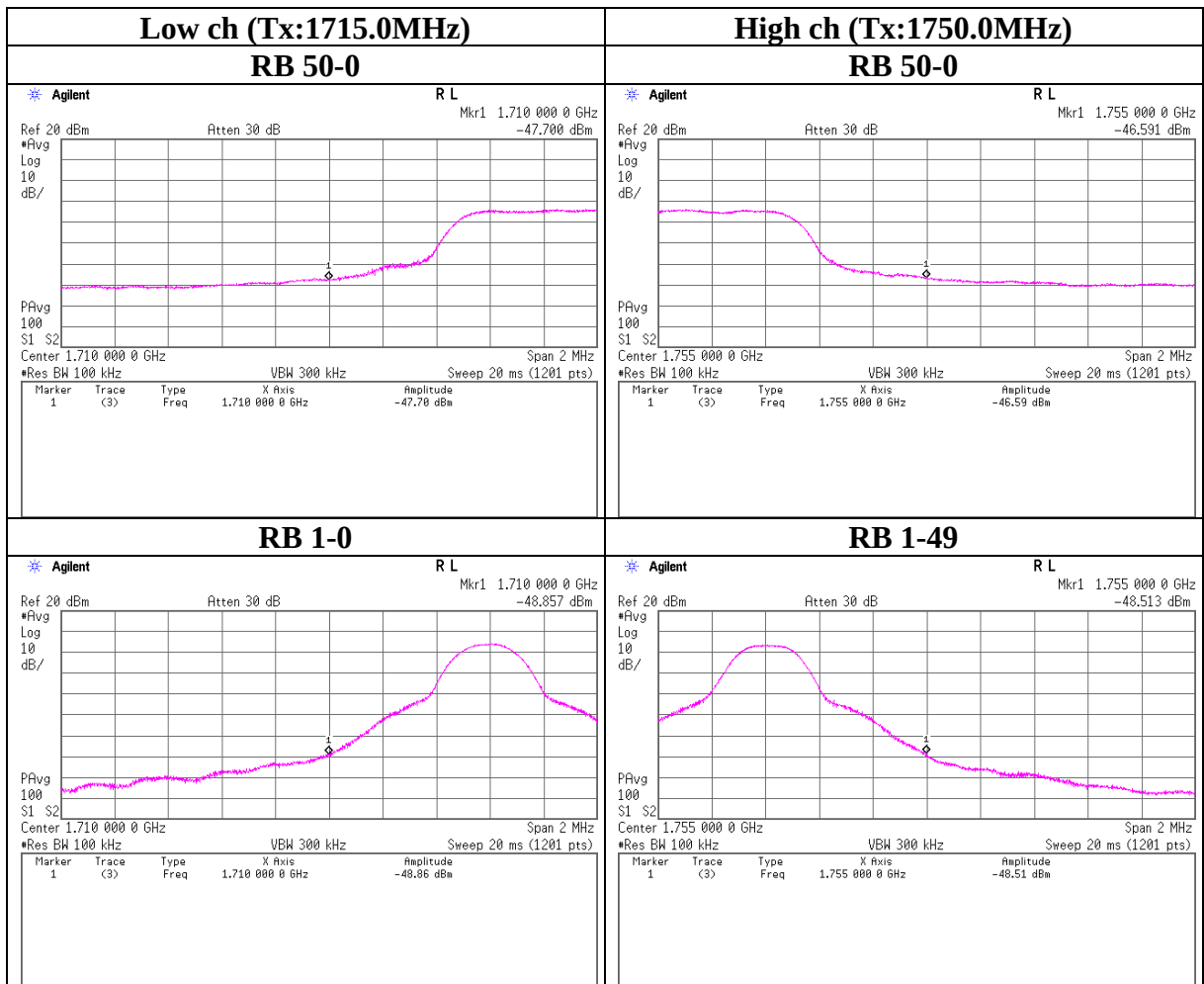
Band-Edge(Conducted)

LTE Band IV

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/30/2015
Temperature/ Humidity	17deg.C / 40% RH
Engineer	Yutaka Yoshida
Mode	Tx LTE(QPSK), BW 10MHz

RB Size	RB Start	Frequency [MHz]	Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
50	0	1710.00	-47.70	10.02	6.78	-30.90	-13.0	17.90
	0	1755.00	-46.59	10.02	6.79	-29.78	-13.0	16.78
1	0	1710.00	-48.86	10.02	6.78	-32.06	-13.0	19.06
	49	1755.00	-48.51	10.02	6.79	-31.70	-13.0	18.70

Sample Calculation : Result = Reading + Atten. + Cable Loss



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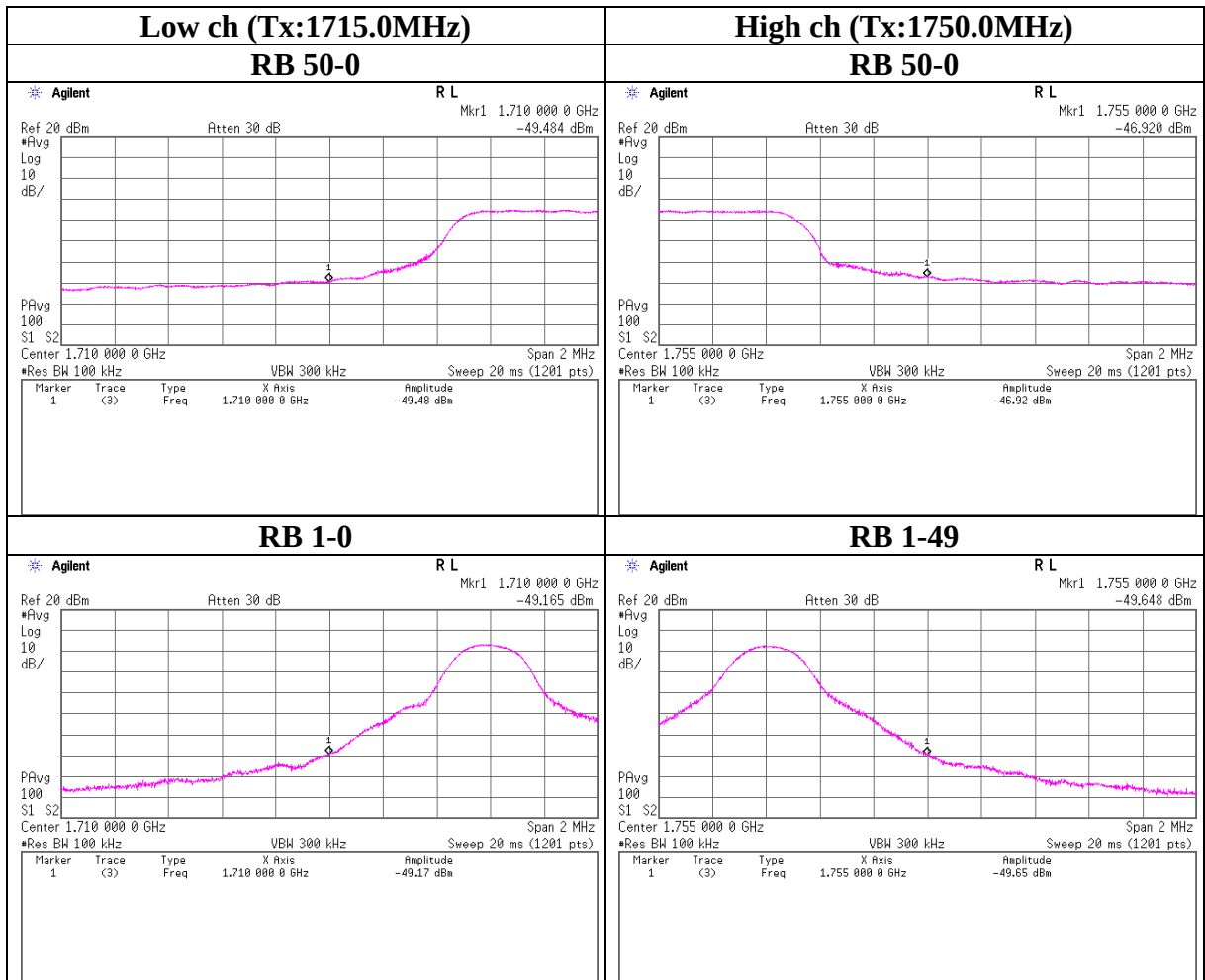
Band-Edge(Conducted)

LTE Band IV

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/30/2015
Temperature/ Humidity	17deg. C / 40% RH
Engineer	Yutaka Yoshida
Mode	Tx LTE(16QAM), BW 10MHz

RB Size	RB Start	Frequency [MHz]	Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
50	0	1710.00	-49.48	10.02	6.78	-32.68	-13.0	19.68
	0	1755.00	-46.92	10.02	6.79	-30.11	-13.0	17.11
1	0	1710.00	-49.17	10.02	6.78	-32.37	-13.0	19.37
	49	1755.00	-49.65	10.02	6.79	-32.84	-13.0	19.84

Sample Calculation : Result = Reading + Atten. + Cable Loss



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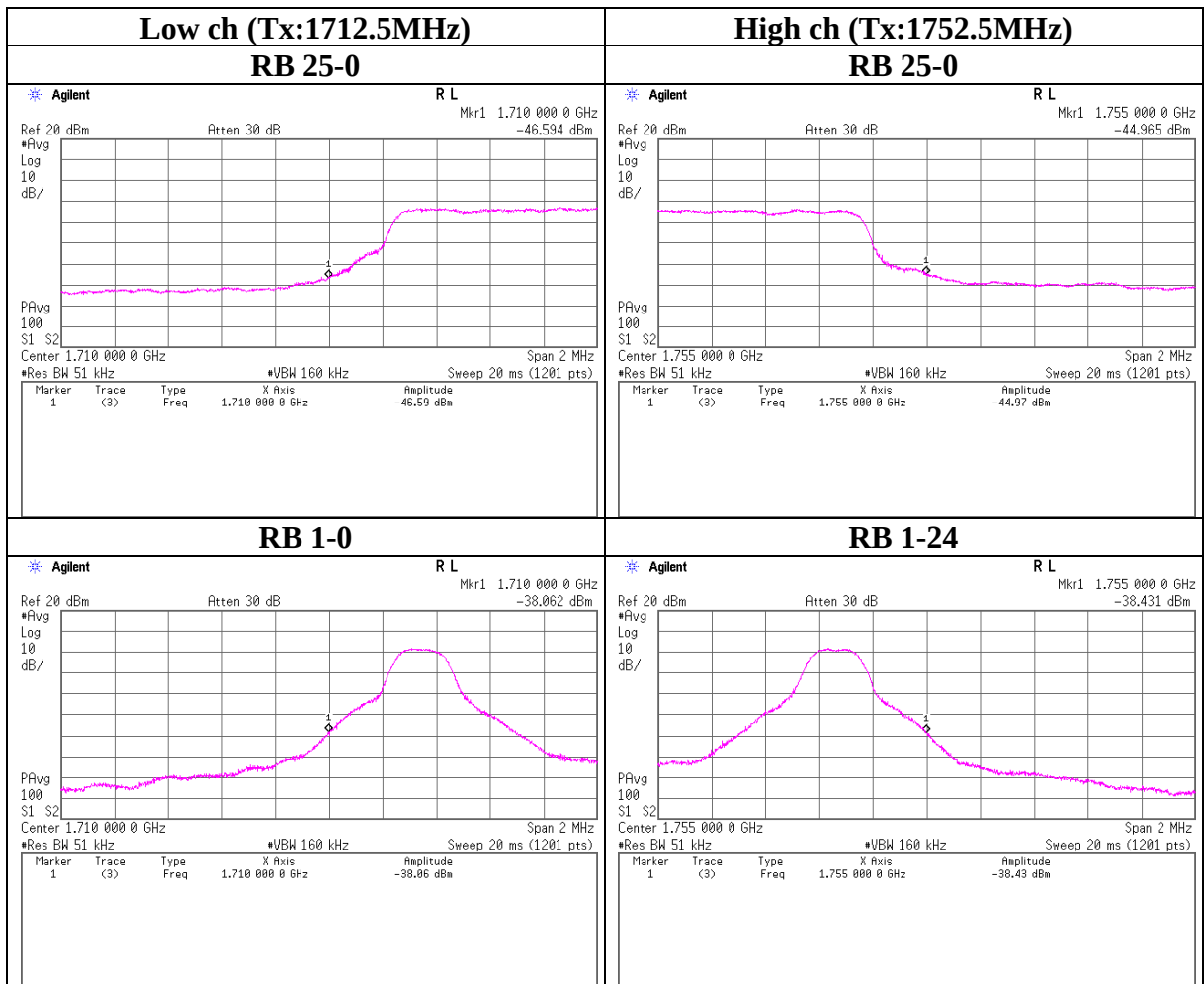
Facsimile : +81 596 24 8124

Band-Edge(Conducted) LTE Band IV

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/30/2015
Temperature/ Humidity	17deg.C / 40% RH
Engineer	Yutaka Yoshida
Mode	Tx LTE(QPSK), BW 5MHz

RB Size	RB Start	Frequency [MHz]	Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
25	0	1710.00	-46.59	10.02	6.78	-29.79	-13.0	16.79
	0	1755.00	-44.97	10.02	6.79	-28.16	-13.0	15.16
1	0	1710.00	-38.06	10.02	6.78	-21.26	-13.0	8.26
	24	1755.00	-38.43	10.02	6.79	-21.62	-13.0	8.62

Sample Calculation : Result = Reading + Atten. + Cable Loss



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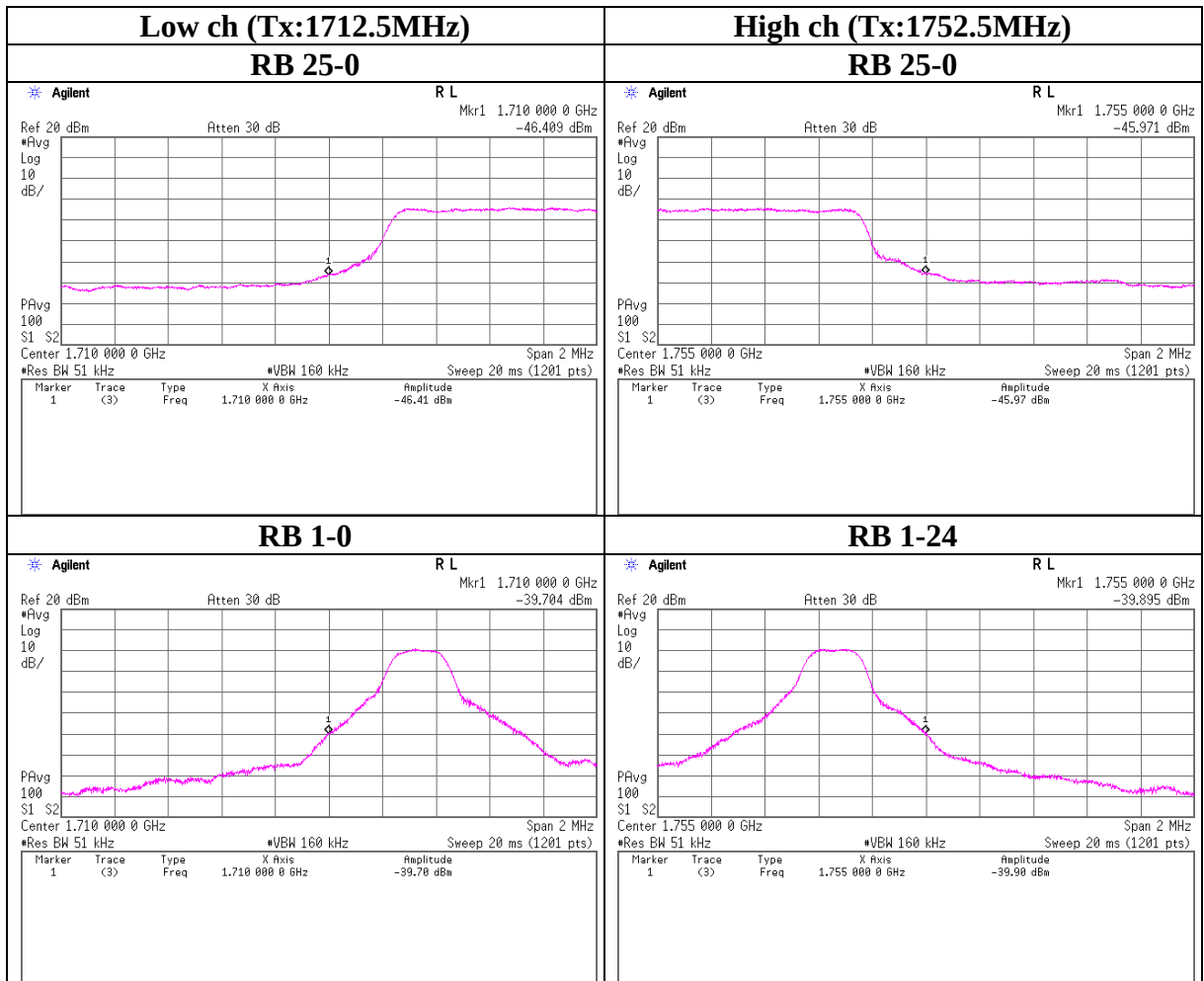
Band-Edge(Conducted)

LTE Band IV

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/30/2015
Temperature/ Humidity	17deg. C / 40% RH
Engineer	Yutaka Yoshida
Mode	Tx LTE(16QAM), BW 5MHz

RB Size	RB Start	Frequency [MHz]	Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
25	0	1710.00	-46.41	10.02	6.78	-29.61	-13.0	16.61
	0	1755.00	-45.97	10.02	6.79	-29.16	-13.0	16.16
1	0	1710.00	-39.70	10.02	6.78	-22.90	-13.0	9.90
	24	1755.00	-39.90	10.02	6.79	-23.09	-13.0	10.09

Sample Calculation : Result = Reading + Atten. + Cable Loss



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Facsimile : +81 596 24 8124

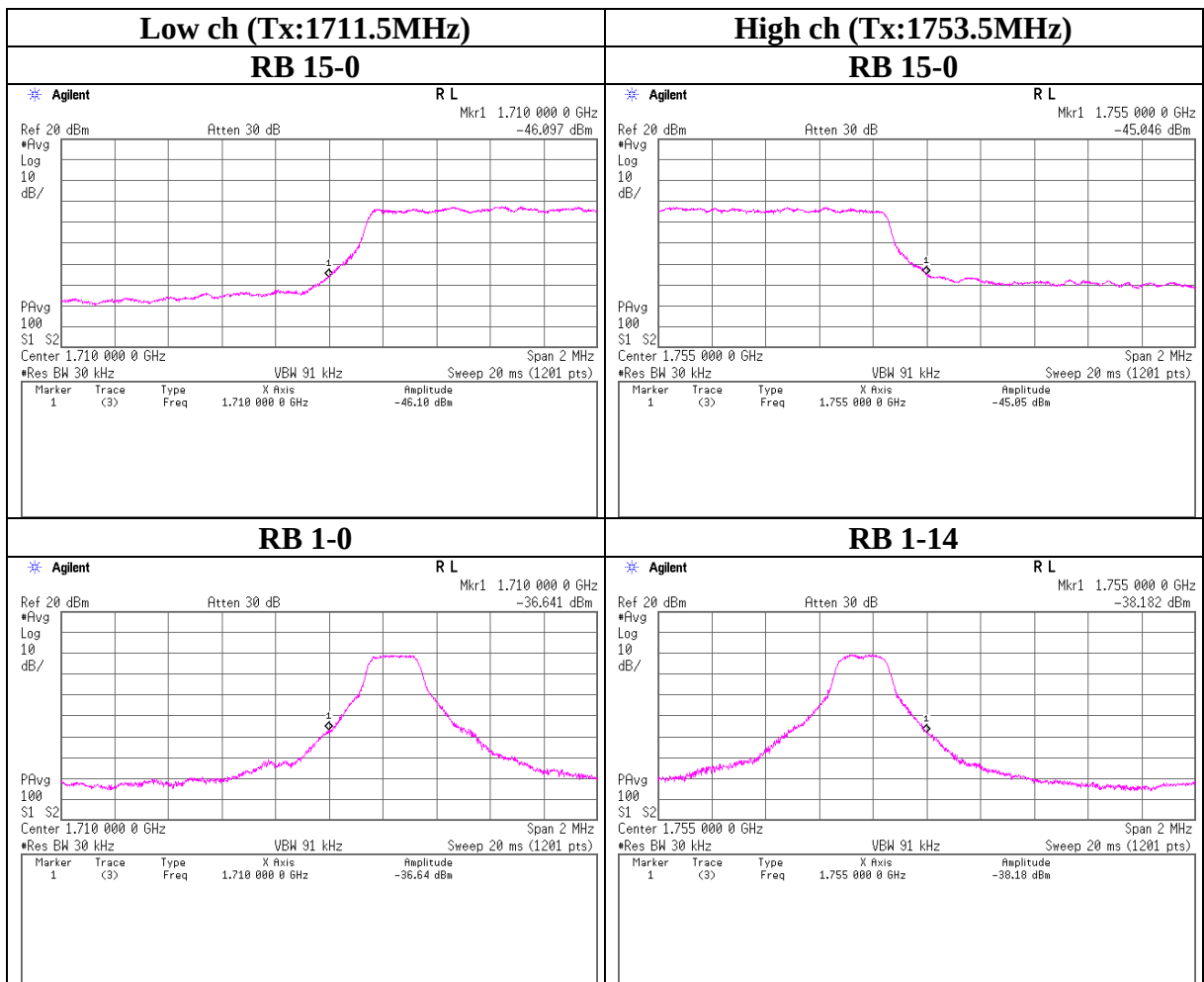
Band-Edge(Conducted)

LTE Band IV

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/30/2015
Temperature/ Humidity	17deg. C / 40% RH
Engineer	Yutaka Yoshida
Mode	Tx LTE(QPSK), BW 3MHz

RB Size	RB Start	Frequency [MHz]	Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
15	0	1710.00	-46.10	10.02	6.78	-29.30	-13.0	16.30
	0	1755.00	-45.05	10.02	6.79	-28.24	-13.0	15.24
1	0	1710.00	-36.64	10.02	6.78	-19.84	-13.0	6.84
	14	1755.00	-38.18	10.02	6.79	-21.37	-13.0	8.37

Sample Calculation : Result = Reading + Atten. + Cable Loss



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Facsimile : +81 596 24 8124

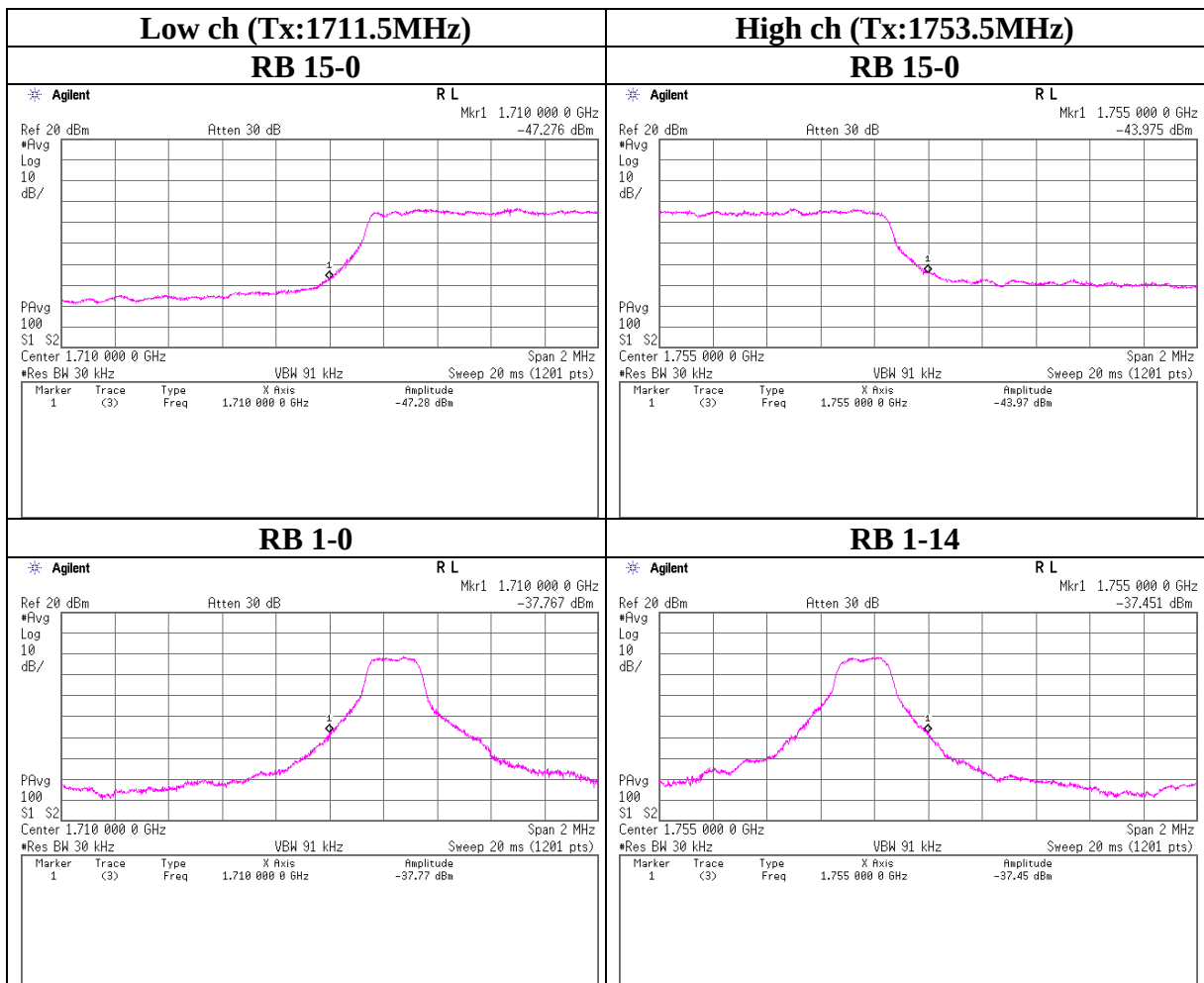
Band-Edge(Conducted)

LTE Band IV

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/30/2015
Temperature/ Humidity	17deg. C / 40% RH
Engineer	Yutaka Yoshida
Mode	Tx LTE(16QAM), BW 3MHz

RB Size	RB Start	Frequency [MHz]	Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
15	0	1710.00	-47.28	10.02	6.78	-30.48	-13.0	17.48
	0	1755.00	-43.98	10.02	6.79	-27.17	-13.0	14.17
1	0	1710.00	-37.77	10.02	6.78	-20.97	-13.0	7.97
	14	1755.00	-37.45	10.02	6.79	-20.64	-13.0	7.64

Sample Calculation : Result = Reading + Atten. + Cable Loss



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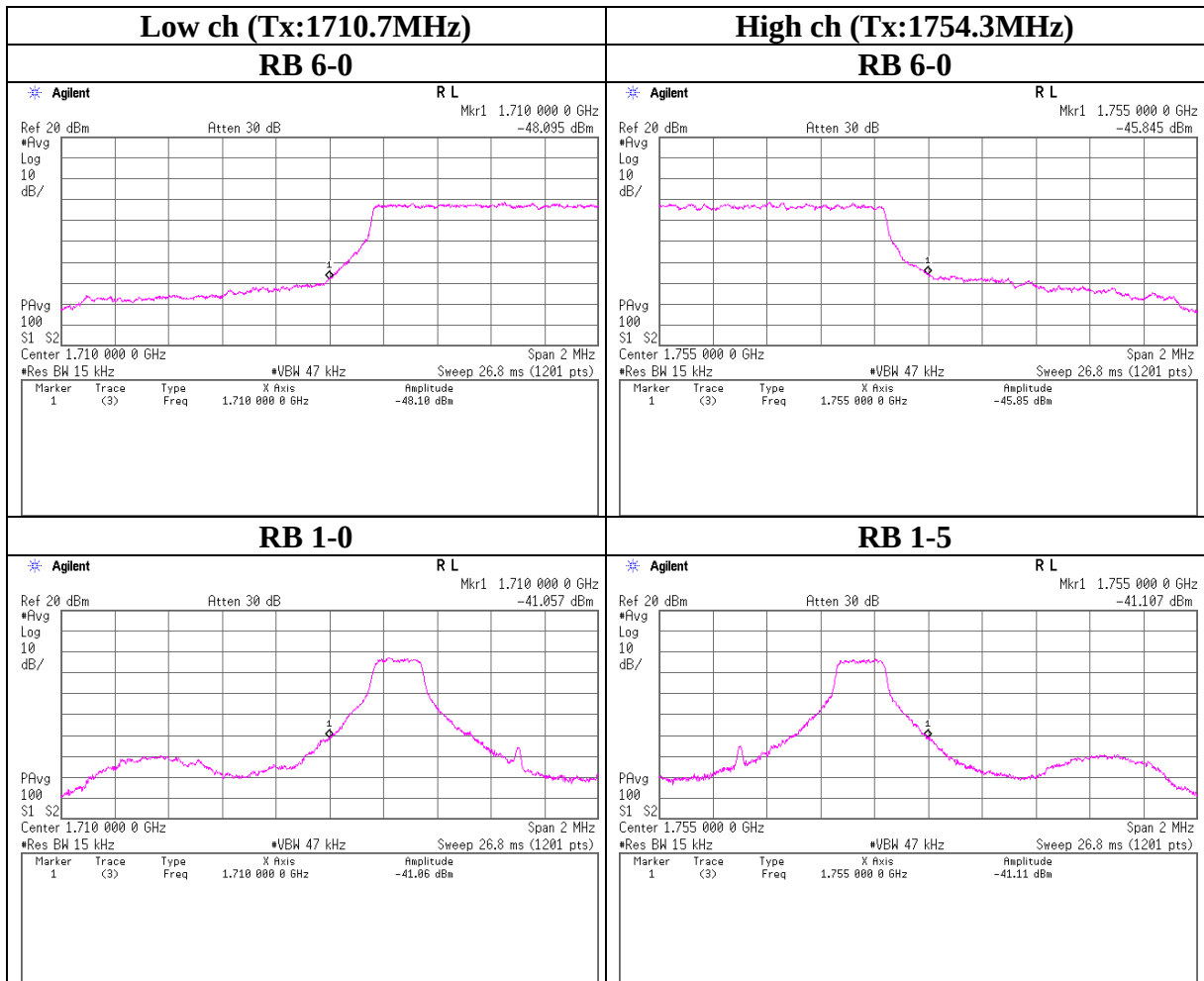
Band-Edge(Conducted)

LTE Band IV

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/30/2015
Temperature/ Humidity	17deg. C / 40% RH
Engineer	Yutaka Yoshida
Mode	Tx LTE(QPSK), BW 1.4MHz

RB Size	RB Start	Frequency [MHz]	Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
6	0	1710.00	-48.10	10.02	6.78	-31.30	-13.0	18.30
	0	1755.00	-45.85	10.02	6.79	-29.04	-13.0	16.04
1	0	1710.00	-41.06	10.02	6.78	-24.26	-13.0	11.26
	5	1755.00	-41.11	10.02	6.79	-24.30	-13.0	11.30

Sample Calculation : Result = Reading + Atten. + Cable Loss



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Facsimile : +81 596 24 8124

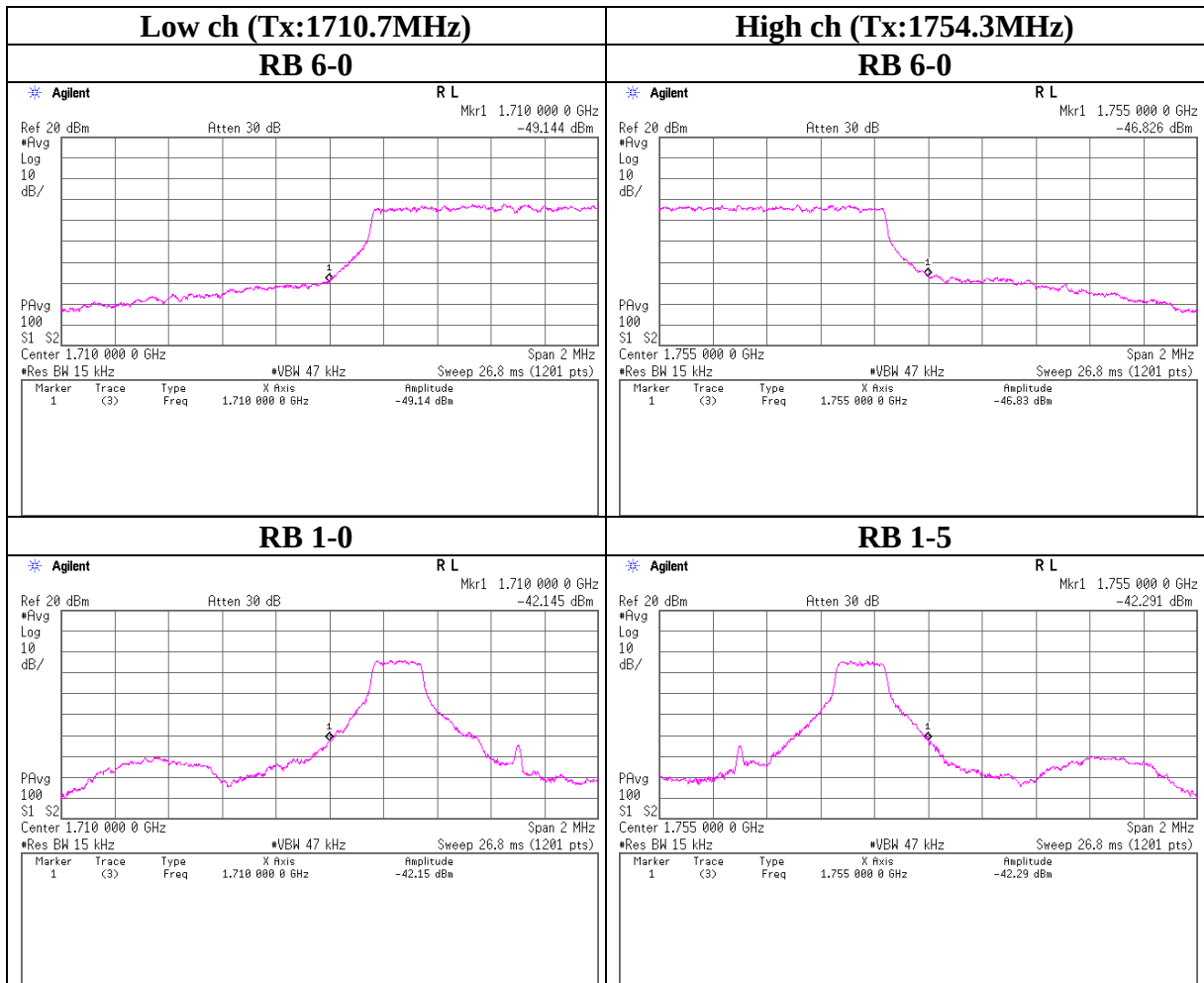
Band-Edge(Conducted)

LTE Band IV

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/30/2015
Temperature/ Humidity	17deg. C / 40% RH
Engineer	Yutaka Yoshida
Mode	Tx LTE(16QAM), BW 1.4MHz

RB Size	RB Start	Frequency [MHz]	Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
6	0	1710.00	-49.14	10.02	6.78	-32.34	-13.0	19.34
	0	1755.00	-46.83	10.02	6.79	-30.02	-13.0	17.02
1	0	1710.00	-42.15	10.02	6.78	-25.35	-13.0	12.35
	5	1755.00	-42.29	10.02	6.79	-25.48	-13.0	12.48

Sample Calculation : Result = Reading + Atten. + Cable Loss



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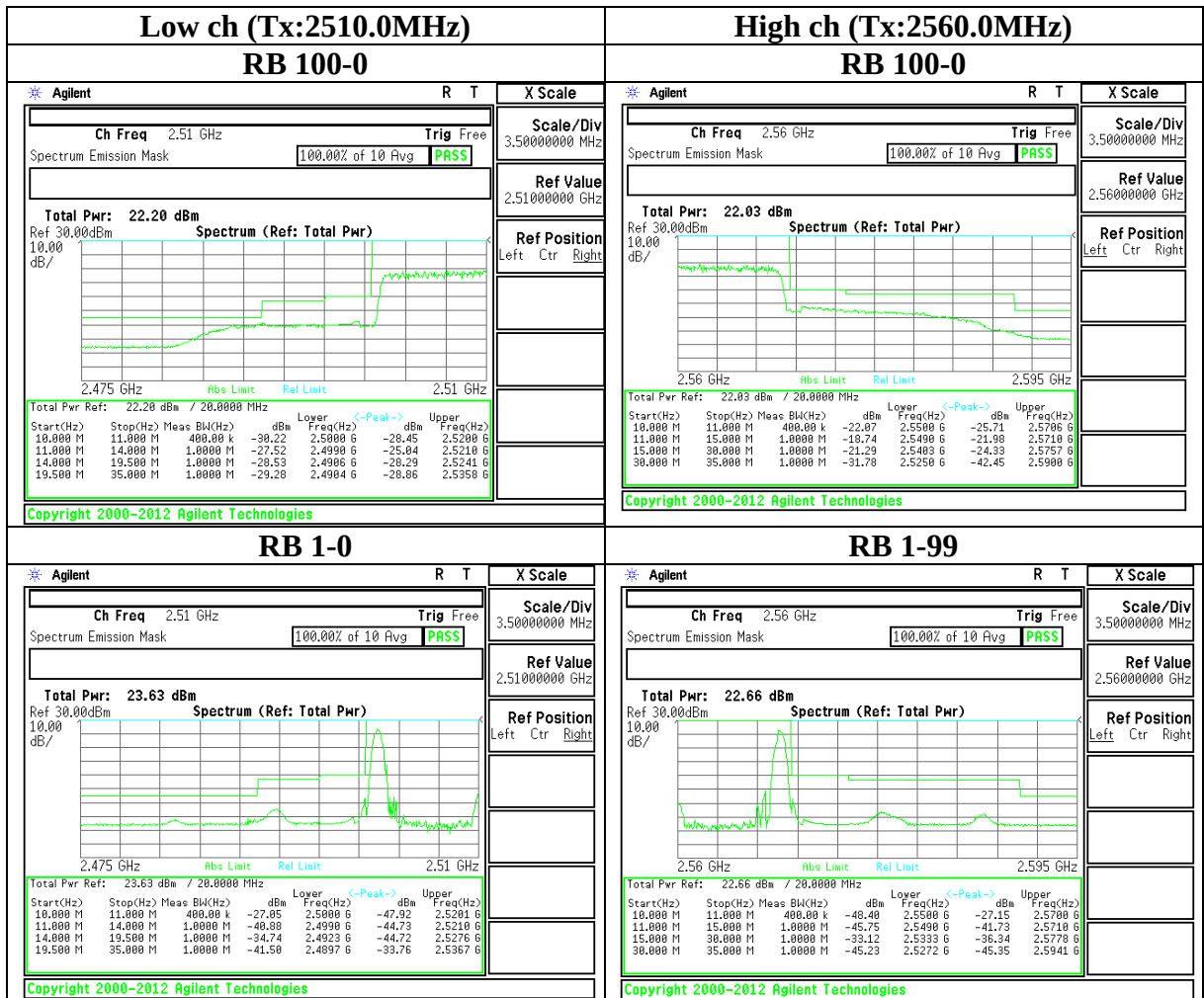
Band-Edge(Conducted)
LTE Band VII

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 01/29/2015
Temperature/ Humidity : 22deg.C / 41% RH
Engineer : Yutaka Yoshida
Mode : Tx LTE(QPSK), BW 20MHz

RB Size	RB Start	Band-Edge Lower/Upper	Frequency [MHz]	Result [dBm]	Limit [dBm]	Margin [dB]
100	0	Lower	2500.00	-30.22	-10.0	20.22
	0		2499.00	-27.52	-10.0	17.52
	0		2490.60	-28.53	-13.0	15.53
	0		2490.40	-29.28	-25.0	4.28
	0	Upper	2570.60	-25.71	-10.0	15.71
	0		2571.00	-21.98	-10.0	11.98
	0		2575.70	-24.33	-13.0	11.33
	0		2590.00	-42.45	-25.0	17.45
1	0	Lower	2500.00	-27.05	-10.0	17.05
	0		2499.00	-40.88	-10.0	30.88
	0		2492.30	-34.74	-13.0	21.74
	0		2489.70	-41.50	-25.0	16.50
	99	Upper	2570.00	-27.15	-10.0	17.15
	99		2571.00	-41.73	-10.0	31.73
	99		2577.80	-36.34	-13.0	23.34
	99		2594.10	-45.35	-25.0	20.35

The cable and attenuator loss were set to Spectrum Analyzer as a correction factor.

Band-Edge(Conducted) **LTE Band VII (QPSK)**



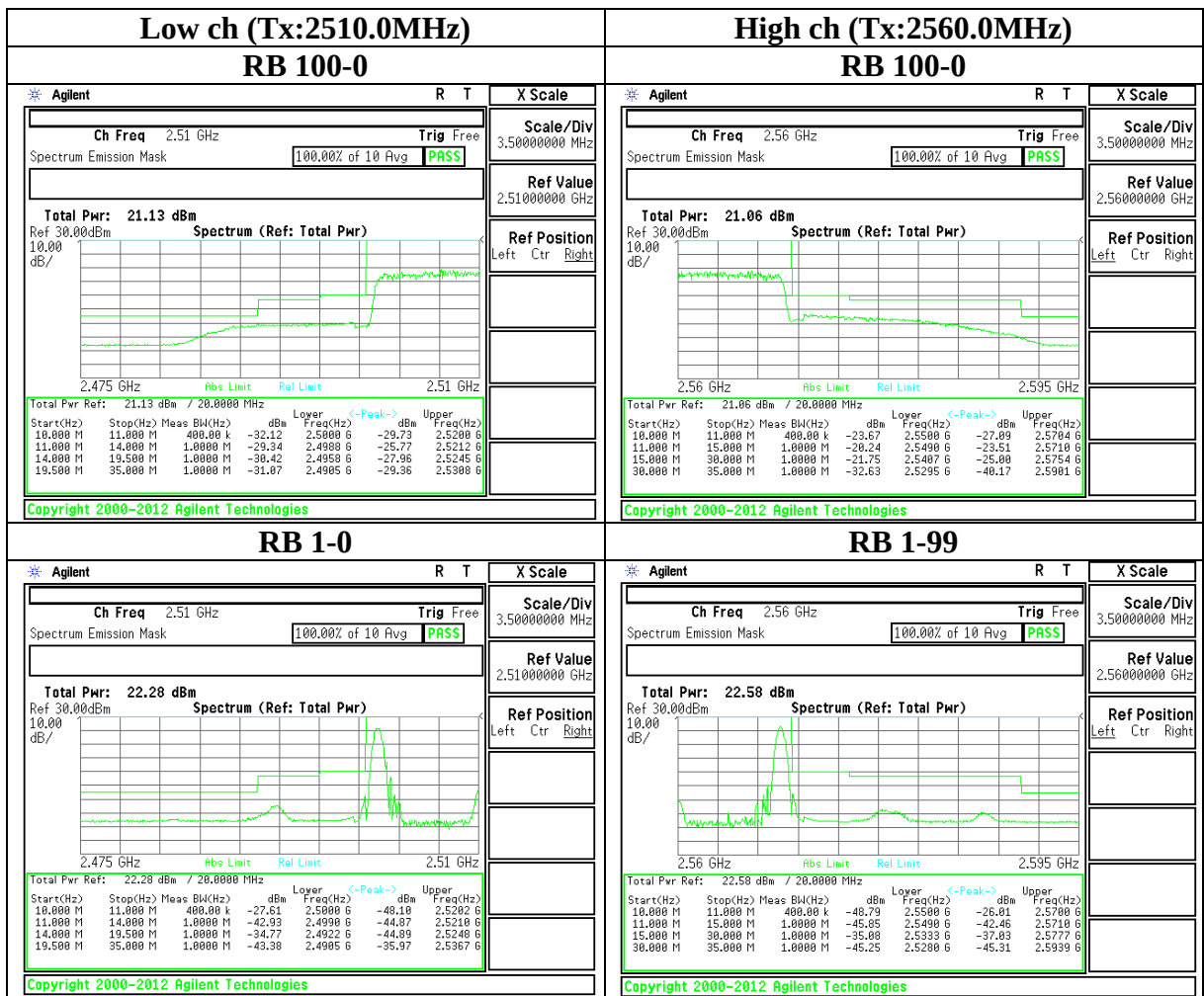
Band-Edge(Conducted)
LTE Band VII

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 01/29/2015
Temperature/ Humidity : 22deg.C / 41% RH
Engineer : Yutaka Yoshida
Mode : Tx LTE(16QAM), BW 20MHz

RB Size	RB Start	Band-Edge Lower/Upper	Frequency [MHz]	Result [dBm]	Limit [dBm]	Margin [dB]
100	0	Lower	2500.00	-32.12	-10.0	22.12
	0		2498.80	-29.34	-10.0	19.34
	0		2495.80	-30.42	-13.0	17.42
	0		2490.50	-31.07	-25.0	6.07
	0	Upper	2570.40	-27.09	-10.0	17.09
	0		2571.00	-23.51	-10.0	13.51
	0		2575.40	-25.00	-13.0	12.00
	0		2590.10	-40.17	-25.0	15.17
1	0	Lower	2500.00	-27.61	-10.0	17.61
	0		2499.00	-42.93	-10.0	32.93
	0		2492.20	-34.77	-13.0	21.77
	0		2490.50	-43.38	-25.0	18.38
	99	Upper	2570.00	-26.01	-10.0	16.01
	99		2571.00	-42.46	-10.0	32.46
	99		2577.70	-37.03	-13.0	24.03
	99		2593.90	-45.31	-25.0	20.31

The cable and attenuator loss were set to Spectrum Analyzer as a correction factor.

Band-Edge(Conducted) LTE Band VII (16QAM)



Band-Edge(Conducted)
LTE Band VII

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 01/29/2015
Temperature/ Humidity : 22deg.C / 41% RH
Engineer : Yutaka Yoshida
Mode : Tx LTE(QPSK), BW 15MHz

RB Size	RB Start	Band-Edge Lower/Upper	Frequency [MHz]	Result [dBm]	Limit [dBm]	Margin [dB]
75	0	Lower	2500.00	-27.09	-10.0	17.09
	0		2497.10	-24.24	-10.0	14.24
	0		2495.50	-26.39	-13.0	13.39
	0		2490.50	-30.35	-25.0	5.35
	0	Upper	2570.10	-26.78	-10.0	16.78
	0		2572.80	-23.91	-10.0	13.91
	0		2575.10	-27.62	-13.0	14.62
	0		2585.00	-37.78	-25.0	12.78
1	0	Lower	2500.00	-22.33	-10.0	12.33
	0		2499.00	-39.94	-10.0	29.94
	0		2494.10	-33.57	-13.0	20.57
	0		2487.40	-35.62	-25.0	10.62
	74	Upper	2570.00	-22.91	-10.0	12.91
	74		2571.00	-39.78	-10.0	29.78
	74		2582.40	-36.42	-13.0	23.42
	74		2586.10	-44.16	-25.0	19.16

The cable and attenuator loss were set to Spectrum Analyzer as a correction factor.

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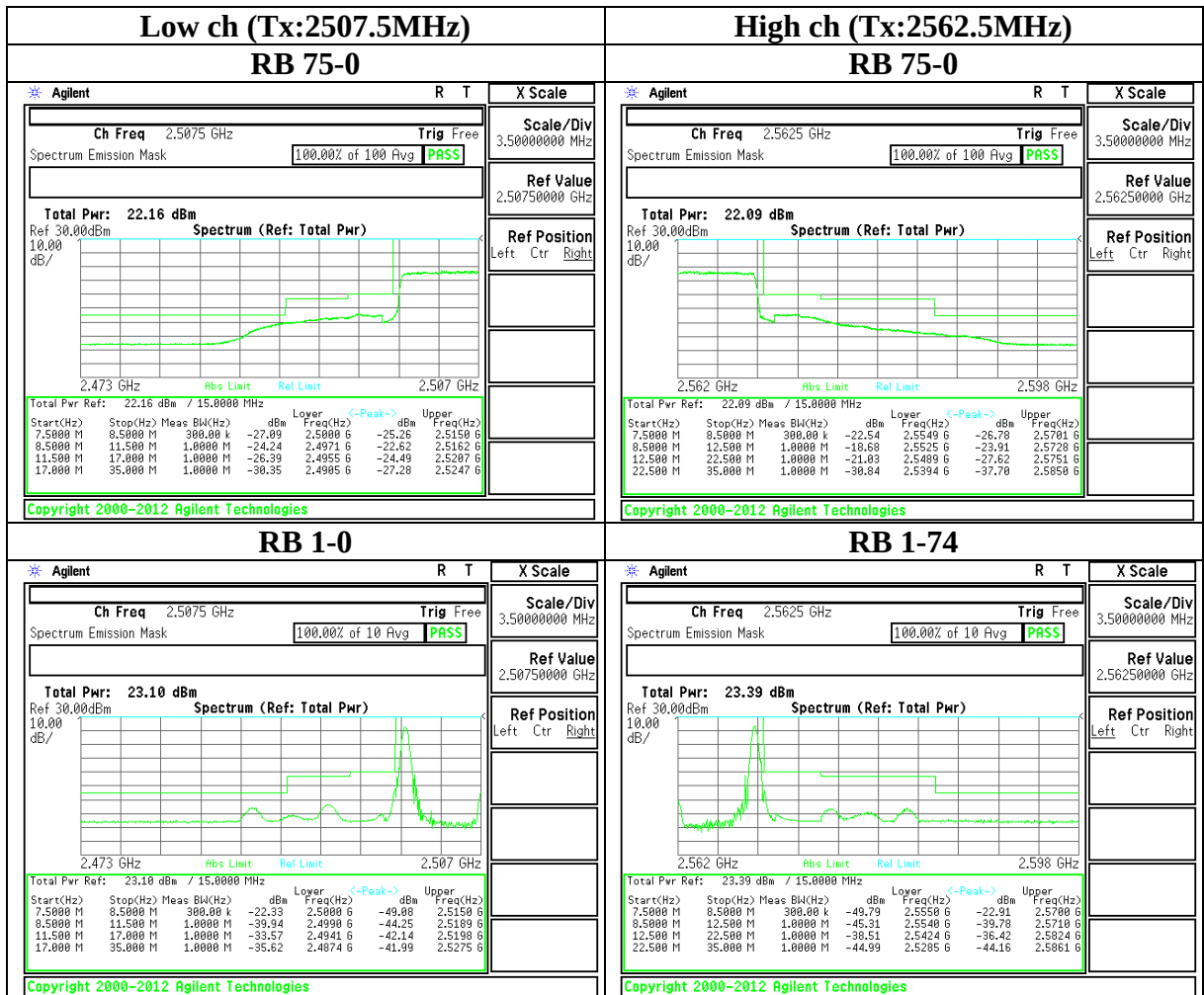
Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Band-Edge(Conducted) **LTE Band VII (QPSK)**



Band-Edge(Conducted)
LTE Band VII

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 01/29/2015
Temperature/ Humidity : 22deg.C / 41% RH
Engineer : Yutaka Yoshida
Mode : Tx LTE(16QAM), BW 15MHz

RB Size	RB Start	Band-Edge Lower/Upper	Frequency [MHz]	Result [dBm]	Limit [dBm]	Margin [dB]
75	0	Lower	2500.00	-28.35	-10.0	18.35
	0		2497.40	-25.24	-10.0	15.24
	0		2495.90	-26.93	-13.0	13.93
	0		2490.50	-32.13	-25.0	7.13
	0	Upper	2570.00	-29.23	-10.0	19.23
	0		2572.30	-25.66	-10.0	15.66
	0		2575.00	-30.15	-13.0	17.15
	0		2585.40	-38.42	-25.0	13.42
1	0	Lower	2500.00	-23.23	-10.0	13.23
	0		2499.00	-42.48	-10.0	32.48
	0		2494.10	-34.23	-13.0	21.23
	0		2487.50	-36.95	-25.0	11.95
	74	Upper	2570.00	-25.08	-10.0	15.08
	74		2571.00	-42.33	-10.0	32.33
	74		2582.40	-36.91	-13.0	23.91
	74		2585.50	-44.78	-25.0	19.78

The cable and attenuator loss were set to Spectrum Analyzer as a correction factor.

UL Japan, Inc.

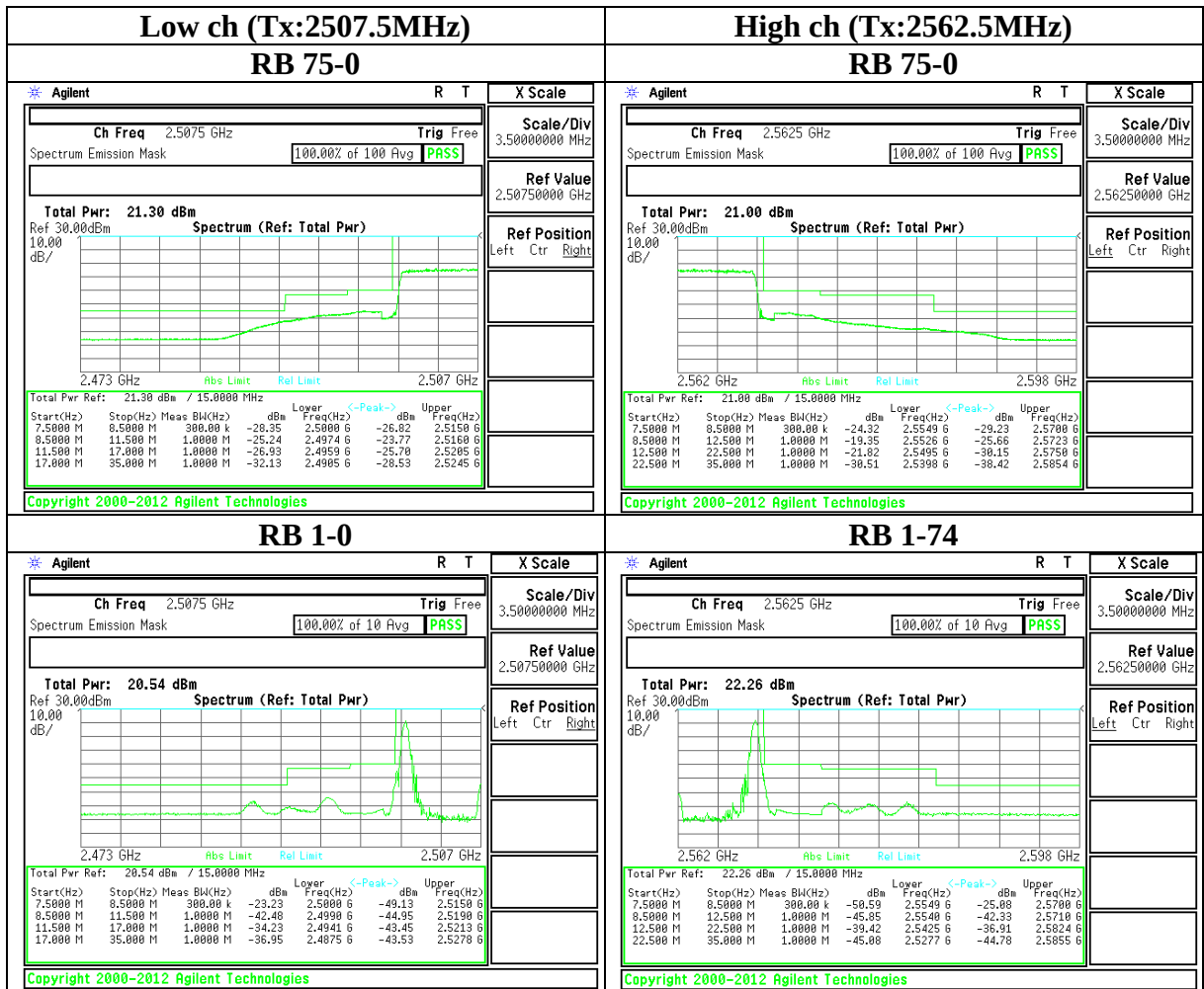
Ise EMC Lab.

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Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Band-Edge(Conducted)
LTE Band VII (16QAM)



Band-Edge(Conducted)
LTE Band VII

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 01/29/2015
Temperature/ Humidity : 22deg.C / 41% RH
Engineer : Yutaka Yoshida
Mode : Tx LTE(QPSK), BW 10MHz

RB Size	RB Start	Band-Edge Lower/Upper	Frequency [MHz]	Result [dBm]	Limit [dBm]	Margin [dB]
50	0	Lower	2500.00	-26.44	-10.0	16.44
	0		2499.00	-22.99	-10.0	12.99
	0		2495.70	-26.18	-13.0	13.18
	0		2490.50	-37.05	-25.0	12.05
	0	Upper	2570.00	-26.11	-10.0	16.11
	0		2571.00	-22.46	-10.0	12.46
	0		2575.00	-27.69	-13.0	14.69
	0		2580.10	-36.33	-25.0	11.33
1	0	Lower	2500.00	-21.37	-10.0	11.37
	0		2499.00	-34.01	-10.0	24.01
	0		2491.60	-33.27	-13.0	20.27
	0		2490.50	-41.36	-25.0	16.36
	49	Upper	2570.00	-26.62	-10.0	16.62
	49		2573.70	-35.10	-10.0	25.10
	49		2578.20	-35.09	-13.0	22.09
	49		2580.00	-41.22	-25.0	16.22

The cable and attenuator loss were set to Spectrum Analyzer as a correction factor.

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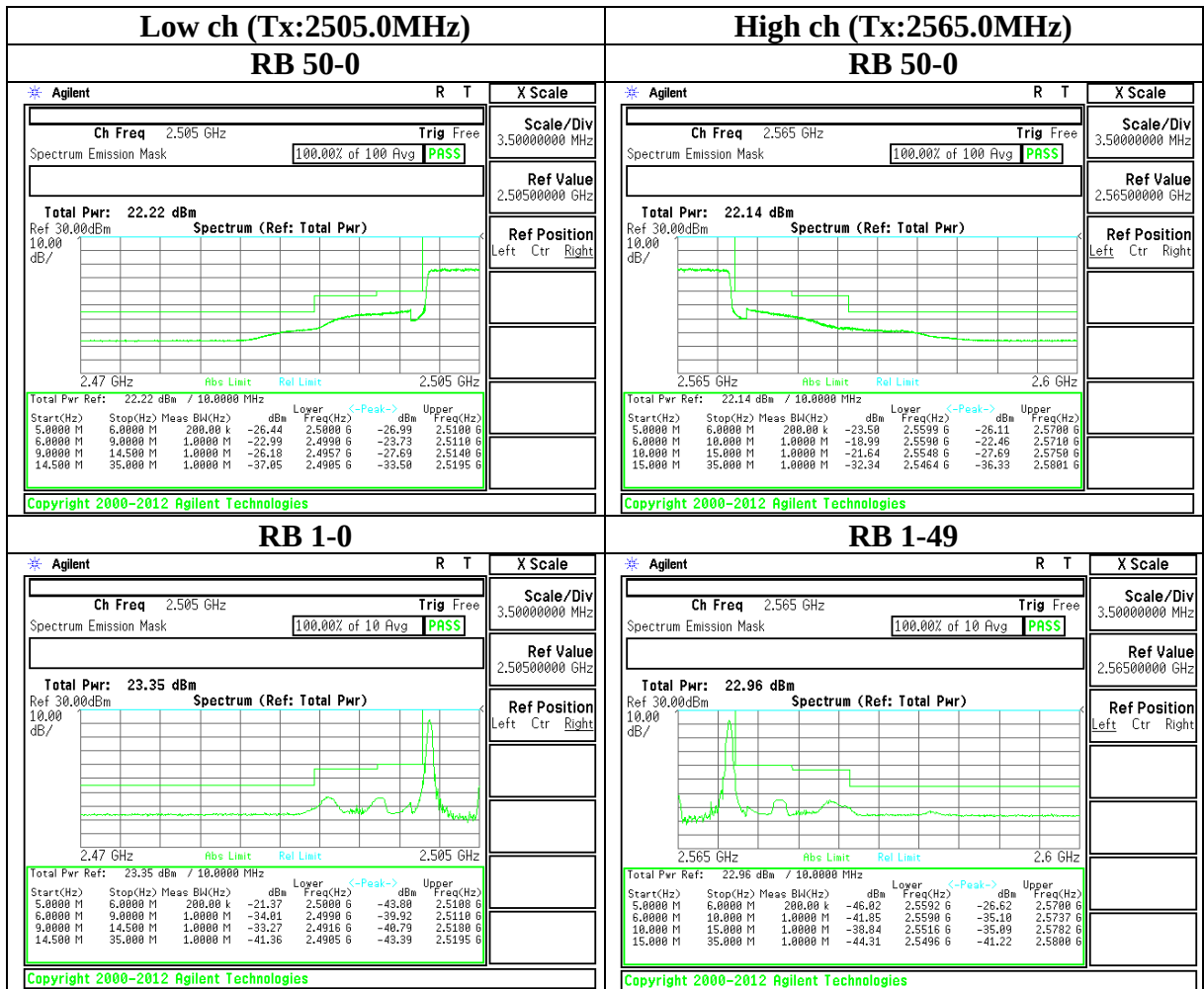
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Band-Edge(Conducted)
LTE Band VII (QPSK)



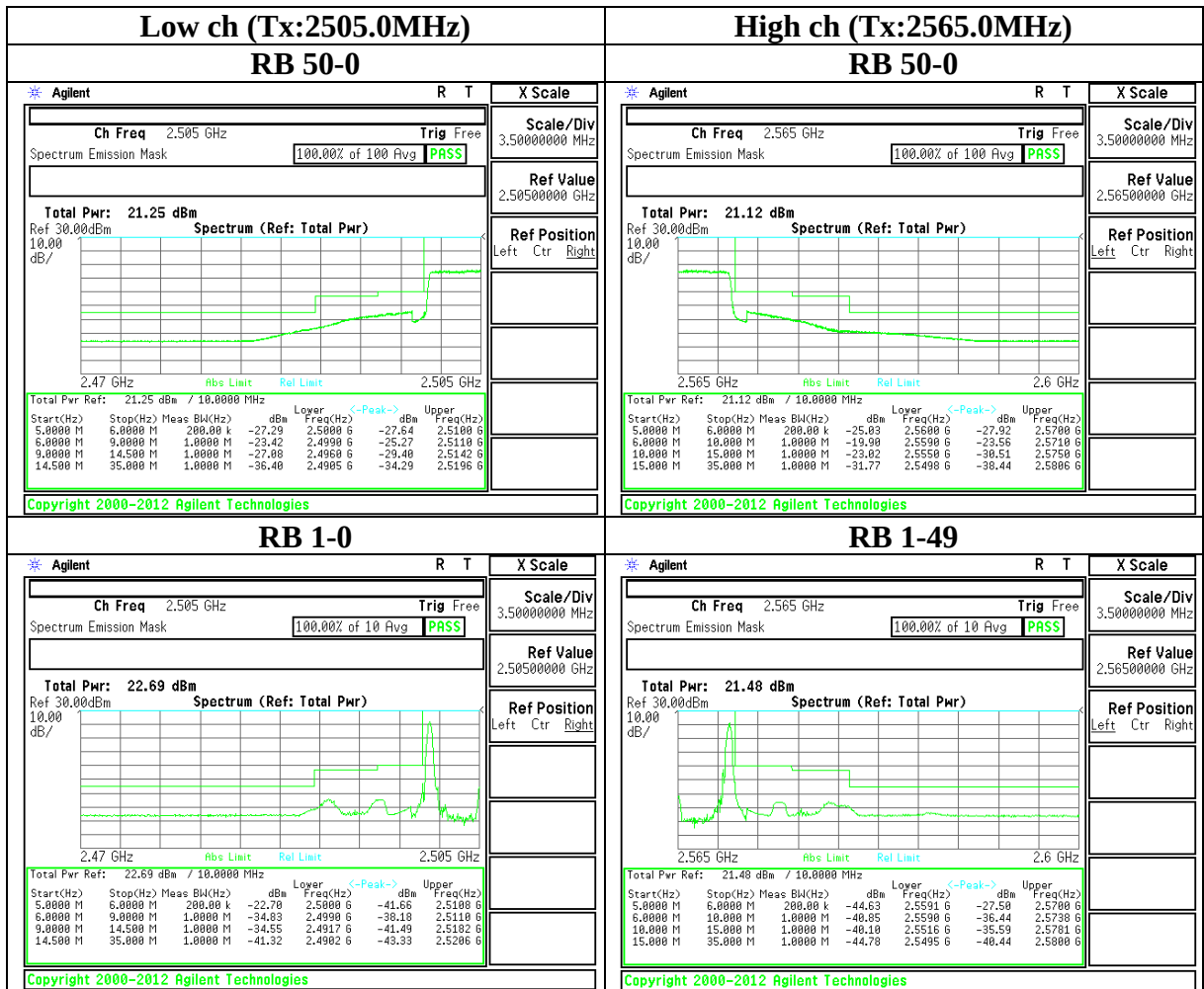
Band-Edge(Conducted)
LTE Band VII

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 01/29/2015
Temperature/ Humidity : 22deg.C / 41% RH
Engineer : Yutaka Yoshida
Mode : Tx LTE(16QAM), BW 10MHz

RB Size	RB Start	Band-Edge Lower/Upper	Frequency [MHz]	Result [dBm]	Limit [dBm]	Margin [dB]
50	0	Lower	2500.00	-27.29	-10.0	17.29
	0		2499.00	-23.42	-10.0	13.42
	0		2496.00	-27.08	-13.0	14.08
	0		2490.50	-36.40	-25.0	11.40
	0	Upper	2570.00	-27.92	-10.0	17.92
	0		2571.00	-23.56	-10.0	13.56
	0		2575.00	-30.51	-13.0	17.51
	0		2580.60	-38.44	-25.0	13.44
1	0	Lower	2500.00	-22.70	-10.0	12.70
	0		2499.00	-34.83	-10.0	24.83
	0		2491.70	-34.55	-13.0	21.55
	0		2490.20	-41.32	-25.0	16.32
	49	Upper	2570.00	-27.50	-10.0	17.50
	49		2573.80	-36.44	-10.0	26.44
	49		2578.10	-35.59	-13.0	22.59
	49		2580.00	-40.44	-25.0	15.44

The cable and attenuator loss were set to Spectrum Analyzer as a correction factor.

Band-Edge(Conducted) LTE Band VII (16QAM)



Band-Edge(Conducted)

LTE Band VII

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/29/2015
Temperature/ Humidity	22deg.C / 41% RH
Engineer	Yutaka Yoshida
Mode	Tx LTE(QPSK), BW 5MHz

RB Size	RB Start	Band-Edge Lower/Upper	Frequency [MHz]	Result [dBm]	Limit [dBm]	Margin [dB]
25	0	Lower	2500.00	-21.18	-10.0	11.18
	0		2499.00	-31.24	-10.0	21.24
	0		2495.90	-32.24	-13.0	19.24
	0		2492.50	-33.04	-25.0	8.04
	0	Upper	2570.00	-27.98	-10.0	17.98
	0		2571.00	-27.18	-10.0	17.18
	0		2575.50	-33.64	-13.0	20.64
	0		2576.40	-33.20	-25.0	8.20
1	0	Lower	2500.00	-12.69	-10.0	2.69
	0		2499.00	-31.52	-10.0	21.52
	0		2496.00	-31.95	-13.0	18.95
	0		2490.60	-38.86	-25.0	13.86
	24	Upper	2570.00	-18.99	-10.0	8.99
	24		2573.80	-30.93	-10.0	20.93
	24		2575.00	-41.95	-13.0	28.95
	24		2579.50	-36.69	-25.0	11.69

The cable and attenuator loss were set to Spectrum Analyzer as a correction factor.

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Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Band-Edge(Conducted)
LTE Band VII (QPSK)



Band-Edge(Conducted)

LTE Band VII

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/29/2015
Temperature/ Humidity	22deg.C / 41% RH
Engineer	Yutaka Yoshida
Mode	Tx LTE(16QAM), BW 5MHz

RB Size	RB Start	Band-Edge Lower/Upper	Frequency [MHz]	Result [dBm]	Limit [dBm]	Margin [dB]
25	0	Lower	2500.00	-25.33	-10.0	15.33
	0		2499.00	-32.16	-10.0	22.16
	0		2495.70	-34.08	-13.0	21.08
	0		2493.50	-34.59	-25.0	9.59
	0	Upper	2570.00	-29.34	-10.0	19.34
	0		2571.00	-28.82	-10.0	18.82
	0		2575.60	-33.84	-13.0	20.84
	0		2576.00	-34.08	-25.0	9.08
1	0	Lower	2500.00	-11.59	-10.0	1.59
	0		2499.00	-30.03	-10.0	20.03
	0		2496.00	-33.98	-13.0	20.98
	0		2490.40	-38.90	-25.0	13.90
	24	Upper	2570.00	-19.80	-10.0	9.80
	24		2573.80	-32.41	-10.0	22.41
	24		2575.00	-42.30	-13.0	29.30
	24		2579.60	-35.91	-25.0	10.91

The cable and attenuator loss were set to Spectrum Analyzer as a correction factor.

UL Japan, Inc.

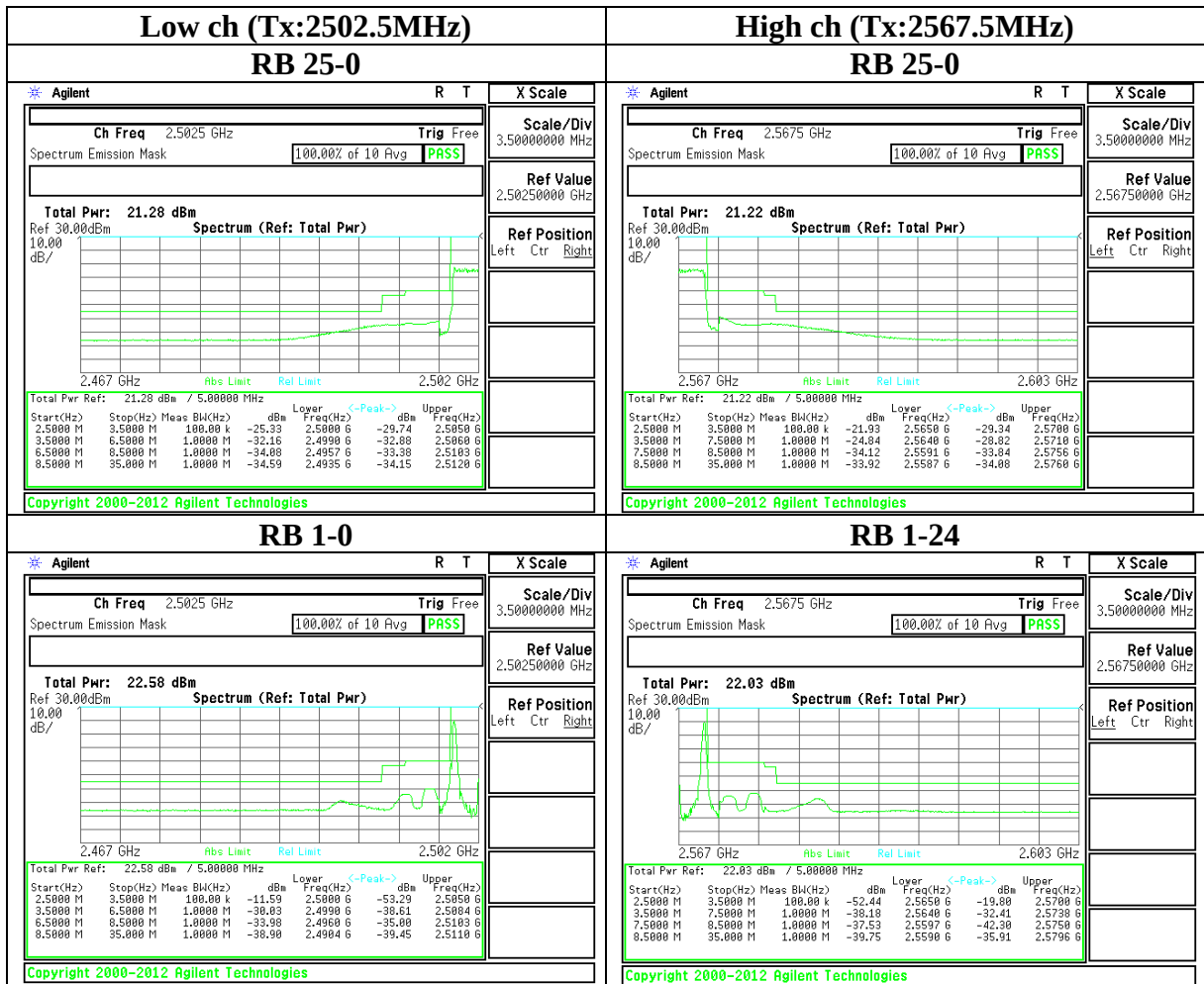
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Band-Edge(Conducted)
LTE Band VII (16QAM)

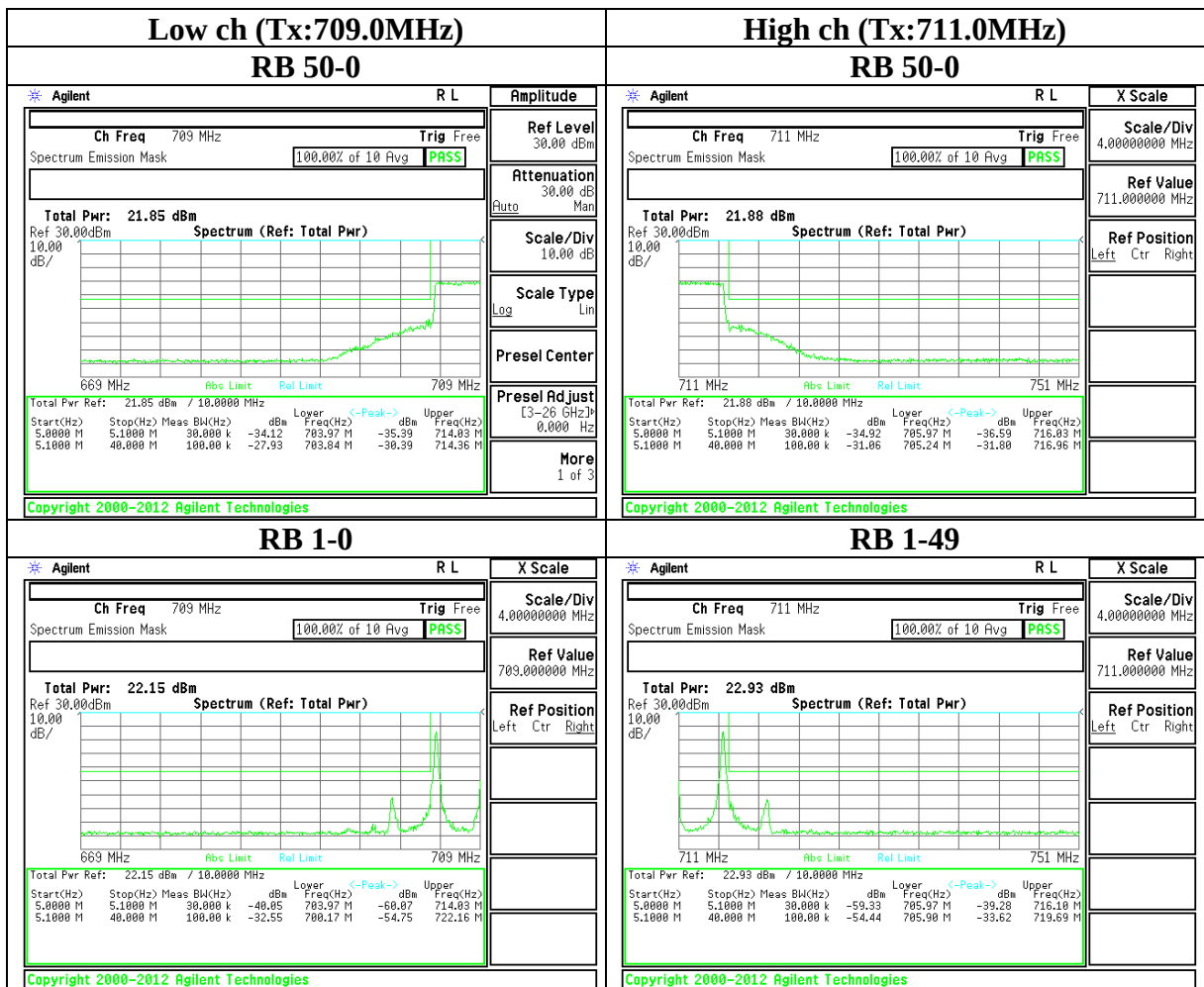


Band-Edge(Conducted) LTE Band XVII

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/30/2015
Temperature/ Humidity	17deg.C / 40% RH
Engineer	Yutaka Yoshida
Mode	Tx LTE(QPSK), BW 10MHz

RB Size	RB Start	Band-Edge Lower/Upper	Frequency [MHz]	Result [dBm]	Limit [dBm]	Margin [dB]
50	0	Lower	703.97	-34.12	-13.0	21.12
	0		703.84	-27.93	-13.0	14.93
	0	Upper	716.03	-36.59	-13.0	23.59
	0		716.96	-31.80	-13.0	18.80
1	0	Lower	703.97	-40.05	-13.0	27.05
	0		700.17	-32.55	-13.0	19.55
	49	Upper	716.10	-39.28	-13.0	26.28
	49		719.69	-33.62	-13.0	20.62

The cable and attenuator loss were set to Spectrum Analyzer as a correction factor.



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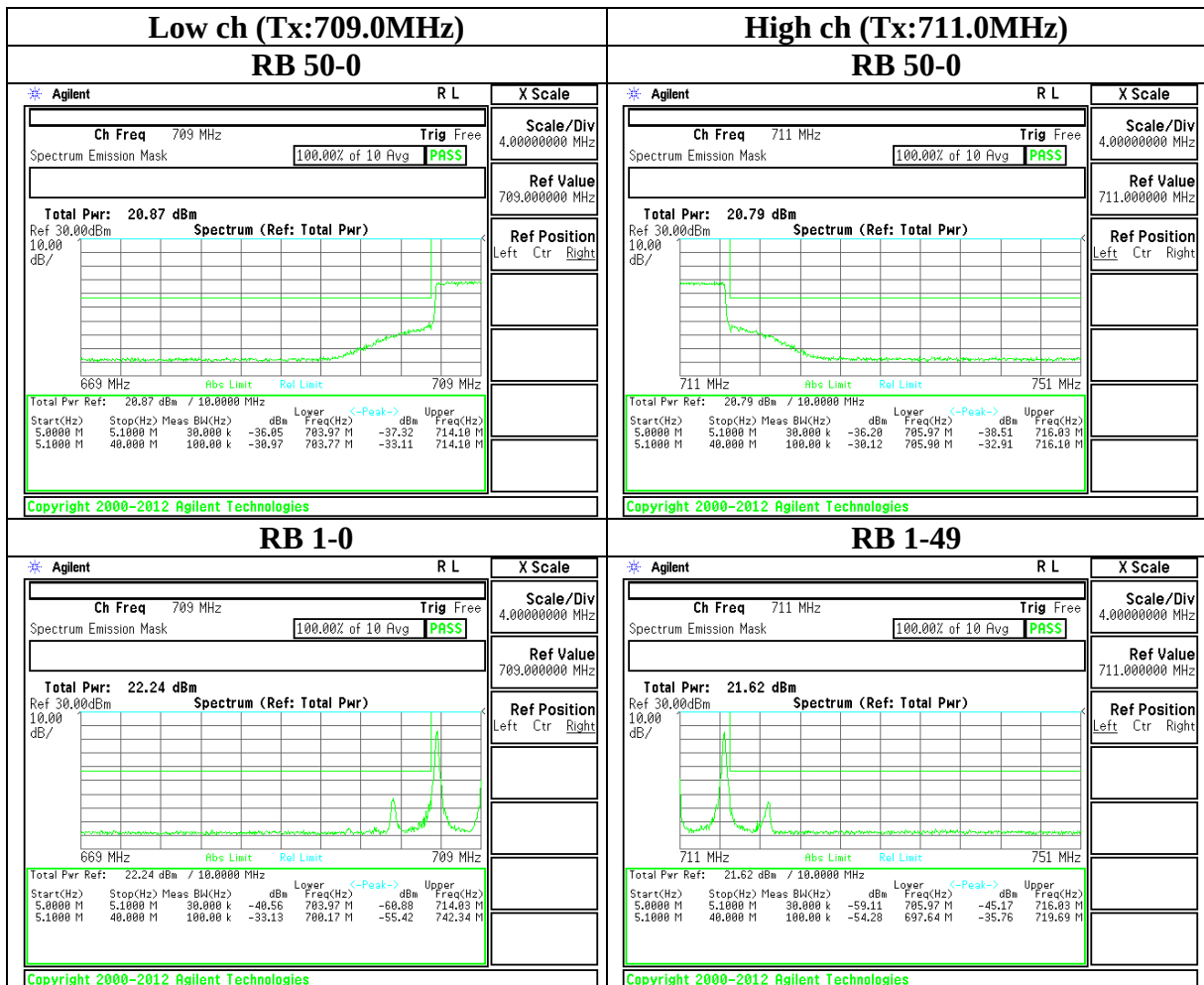
Facsimile : +81 596 24 8124

Band-Edge(Conducted) LTE Band XVII

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/30/2015
Temperature/ Humidity	17deg.C / 40% RH
Engineer	Yutaka Yoshida
Mode	Tx LTE(16QAM), BW 10MHz

RB Size	RB Start	Band-Edge Lower/Upper	Frequency [MHz]	Result [dBm]	Limit [dBm]	Margin [dB]
50	0	Lower	703.97	-36.05	-13.0	23.05
	0		703.77	-30.97	-13.0	17.97
	0	Upper	716.03	-38.51	-13.0	25.51
	0		716.10	-32.91	-13.0	19.91
1	0	Lower	703.97	-40.56	-13.0	27.56
	0		700.17	-33.13	-13.0	20.13
	49	Upper	716.03	-45.17	-13.0	32.17
	49		719.69	-35.76	-13.0	22.76

The cable and attenuator loss were set to Spectrum Analyzer as a correction factor.

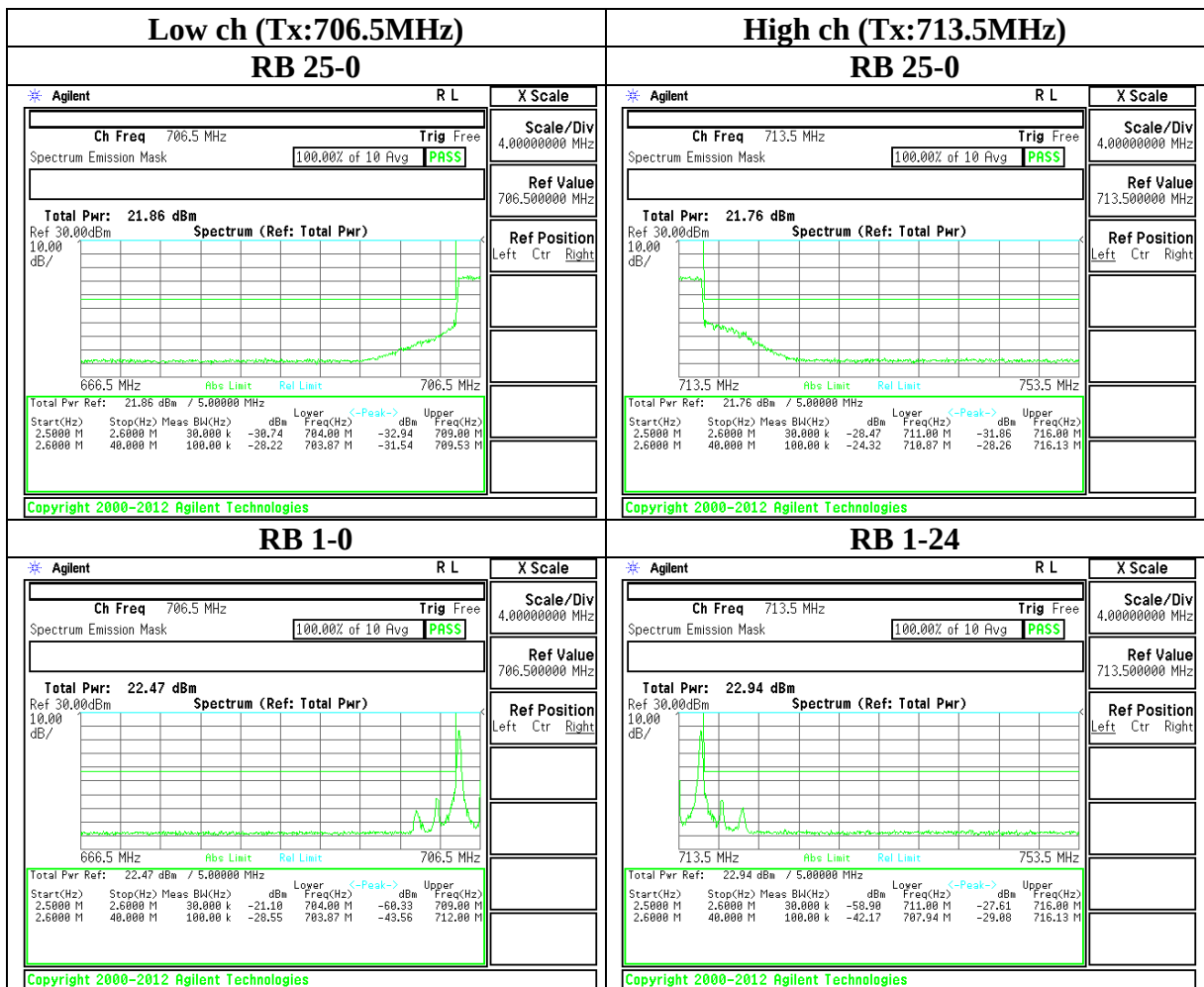


Band-Edge(Conducted) LTE Band XVII

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/30/2015
Temperature/ Humidity	17deg.C / 40% RH
Engineer	Yutaka Yoshida
Mode	Tx LTE(QPSK), BW 5MHz

RB Size	RB Start	Band-Edge Lower/Upper	Frequency [MHz]	Result [dBm]	Limit [dBm]	Margin [dB]
25	0	Lower	704.00	-30.74	-13.0	17.74
	0		703.87	-28.22	-13.0	15.22
	0	Upper	716.00	-31.86	-13.0	18.86
	0		716.13	-28.26	-13.0	15.26
1	0	Lower	704.00	-21.10	-13.0	8.10
	0		703.87	-28.55	-13.0	15.55
	24	Upper	716.00	-27.61	-13.0	14.61
	24		716.13	-29.08	-13.0	16.08

The cable and attenuator loss were set to Spectrum Analyzer as a correction factor.

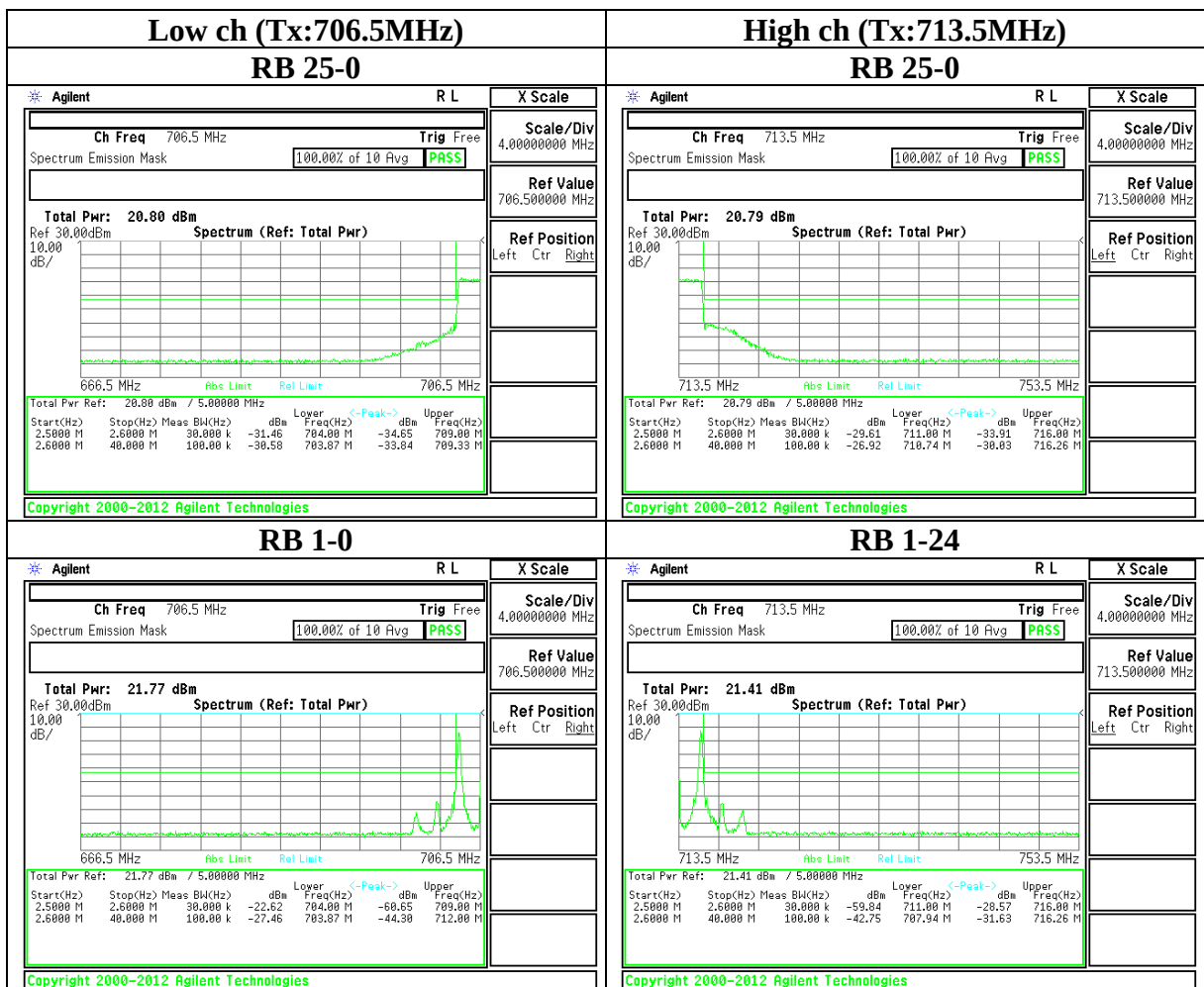


Band-Edge(Conducted) LTE Band XVII

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 01/30/2015
Temperature/ Humidity : 17deg. C / 40% RH
Engineer : Yutaka Yoshida
Mode : Tx LTE(16QAM), BW 5MHz

RB Size	RB Start	Band-Edge Lower/Upper	Frequency [MHz]	Result [dBm]	Limit [dBm]	Margin [dB]
25	0	Lower	704.00	-31.46	-13.0	18.46
	0		703.87	-30.58	-13.0	17.58
	0	Upper	716.00	-33.91	-13.0	20.91
	0		716.26	-30.03	-13.0	17.03
1	0	Lower	704.00	-22.62	-13.0	9.62
	0		703.87	-27.46	-13.0	14.46
	24	Upper	716.00	-28.57	-13.0	15.57
	24		716.26	-31.63	-13.0	18.63

The cable and attenuator loss were set to Spectrum Analyzer as a correction factor.



Band Edge (Radiated)
W-CDMA Band IV

Report No. 10636726H
Test place Ise EMC Lab. No.2 Semi Anechoic Chamber
Date 01/23/2015
Temperature / Humidity 22deg. C / 24 % RH
Engineer Tomoki Matsui
Mode Tx W-CDMA (RMC 12.2kbps), All Up Bits

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Atten. Loss [dB]	Result (EIRP) [dBm]		Limit (EIRP) [dBm]	Margin [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER				HOR	VER		HOR	VER	Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]	
1710.00	49.4	51.5	-26.5	-25.9	3.4	9.3	0.0	-20.7	-20.1	-13.0	7.7	7.1	152	357	126	253	
1755.00	53.5	56.1	-21.4	-21.5	3.5	9.5	0.0	-15.4	-15.5	-13.0	2.4	2.5	149	349	125	253	

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-20GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-20GHz)

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

Detector : S/A PK (RBW: 47kHz, VBW: 150kHz)

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Band Edge (Radiated)

LTE Band IV

Report No. 10636726H
Test place Ise EMC Lab. No.2 Semi Anechoic Chamber
Date 01/30/2015
Temperature / Humidity 21deg. C / 28 % RH
Engineer Hironobu Ohnishi
Mode Tx LTE(QPSK), BW 3MHz

[QPSK, 100% RB allocation]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Atten. Loss [dB]	Result (EIRP) [dBm]		Limit (EIRP) [dBm]	Margin [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER				HOR	VER		HOR	VER	Rx Ant Height [cm]	Turn Table [deg.]	Rx Ant Height [cm]	Turn Table [deg.]	
1710.00	38.1	43.1	-37.6	-34.1	3.4	8.8	0.0	-32.3	-28.7	-13.0	19.3	15.7	128	193	102	287	RB 15-0, Tx 1711.5MHz
1755.00	43.4	48.5	-31.9	-28.7	3.5	9.0	0.0	-26.3	-23.1	-13.0	13.3	10.1	123	190	100	278	RB 15-0, Tx 1753.5MHz

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-20GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-20GHz)

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

Detector : Spectrum analyzer RMS Average (RBW: 30kHz, VBW: 91kHz)

[QPSK, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Atten. Loss [dB]	Result (EIRP) [dBm]		Limit (EIRP) [dBm]	Margin [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER				HOR	VER		HOR	VER	Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]	
1710.00	48.6	54.2	-27.1	-22.9	3.4	8.8	0.0	-21.8	-17.6	-13.0	8.8	4.6	128	193	102	287	RB 1-0, Tx 1711.5MHz
1755.00	50.0	55.8	-25.3	-21.4	3.5	9.0	0.0	-19.7	-15.9	-13.0	6.7	2.9	123	190	100	278	RB 1-14, Tx 1753.5MHz

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-20GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-20GHz)

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

Detector : Spectrum analyzer RMS Average (RBW: 30kHz, VBW: 91kHz)

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Band Edge (Radiated)

LTE Band IV

Report No. 10636726H
Test place Ise EMC Lab. No.2 Semi Anechoic Chamber
Date 01/30/2015
Temperature / Humidity 21deg. C / 28 % RH
Engineer Hironobu Ohnishi
Mode Tx LTE(16QAM), BW 3MHz

[16QAM, 100% RB allocation]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Atten. Loss [dB]	Result (EIRP) [dBm]		Limit (EIRP) [dBm]	Margin [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER				HOR	VER		HOR	VER	Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]	
1710.00	38.4	42.0	-37.3	-35.1	3.4	8.8	0.0	-32.0	-29.8	-13.0	19.0	16.8	128	193	102	287	RB 15-0, Tx 1711.5MHz
1755.00	43.1	48.0	-32.2	-29.2	3.5	9.0	0.0	-26.7	-23.6	-13.0	13.7	10.6	123	190	100	278	RB 15-0, Tx 1753.5MHz

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-20GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-20GHz)

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

Detector : Spectrum analyzer RMS Average (RBW: 30kHz , VBW: 91kHz)

[16QAM, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Atten. Loss [dB]	Result (EIRP) [dBm]		Limit (EIRP) [dBm]	Margin [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER				HOR	VER		HOR	VER	Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]	
1710.00	46.0	50.1	-29.7	-27.0	3.4	8.8	0.0	-24.4	-21.7	-13.0	11.4	8.7	128	193	102	287	RB 1-0, Tx 1711.5MHz
1755.00	48.2	53.7	-27.1	-23.5	3.5	9.0	0.0	-21.5	-17.9	-13.0	8.5	4.9	123	190	100	278	RB 1-14, Tx 1753.5MHz

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-20GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-20GHz)

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

Detector : Spectrum analyzer RMS Average (RBW: 30kHz , VBW: 91kHz)

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Band Edge (Radiated)

LTE Band VII

Report No. 10636726H
Test place Ise EMC Lab. No.2 Semi Anechoic Chamber
Date 01/30/2015
Temperature / Humidity 21deg. C / 28 % RH
Engineer Hironobu Ohnishi
Mode Tx LTE(QPSK), BW 5MHz

[QPSK, 100% RB allocation]

Frequency	Rx SA/TR		Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks
	Reading [dBuV]		Reading [dBm]		Cable Loss [dB]	Ant. Gain [dBi]	Atten. Loss [dB]	(EIRP) [dBm]		(EIRP) [dBm]	[dB]	Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]		
	HOR	VER	HOR	VER				HOR	VER								
2500.00	44.2	43.3	-30.0	-29.7	4.1	10.7	0.0	-23.4	-23.2	-10.0	13.4	13.2	113	341	100	273	Lower, RB 25-0, Tx 2502.5MHz
2495.90	42.9	41.7	-31.3	-31.3	4.1	10.7	0.0	-24.7	-24.8	-13.0	11.7	11.8	113	341	100	273	Lower, RB 25-0, Tx 2502.5MHz
2492.50	38.3	37.7	-35.9	-35.3	4.1	10.6	0.0	-29.4	-28.7	-25.0	4.4	3.7	113	341	100	273	Lower, RB 25-0, Tx 2502.5MHz
2570.00	41.9	42.5	-31.7	-30.0	4.2	10.6	0.0	-25.2	-23.6	-10.0	15.2	13.6	112	338	100	282	Upper, RB 25-0, Tx 2567.5MHz
2575.50	36.4	36.7	-37.1	-35.8	4.2	10.6	0.0	-30.7	-29.4	-13.0	17.7	16.4	112	338	100	282	Upper, RB 25-0, Tx 2567.5MHz
2576.40	35.6	35.5	-37.9	-37.0	4.2	10.6	0.0	-31.5	-30.6	-25.0	6.5	5.6	112	338	100	282	Upper, RB 25-0, Tx 2567.5MHz

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-12.75GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-12.75GHz)

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

Detector : Spectrum Analyzer RMS Average (RBW: 100kHz, VBW: 300kHz) for within 1MHz from band-edge
Spectrum Analyzer RMS Average (RBW: 1MHz, VBW: 3MHz) for other frequencies

[QPSK, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Atten. Loss [dB]	Result (EIRP) [dBm]		Limit (EIRP) [dBm]	Margin [dB]		Horizontal Rx Ant. Height [cm]		Turn Table [deg.]	Vertical Rx Ant. Height [cm]		Turn Table [deg.]	Remarks
	HOR	VER	HOR	VER				HOR	VER		HOR	VER	HOR	VER		HOR	VER		
2500.00	50.1	49.6	-24.1	-23.4	4.1	10.7	0.0	-17.6	-16.9	-10.0	7.6	6.9	113	341	100	273	Lower, RB 1-0, Tx 2502.5MHz		
2496.00	36.2	36.1	-38.0	-36.9	4.1	10.7	0.0	-31.4	-30.3	-13.0	18.4	17.3	113	341	100	273	Lower, RB 1-0, Tx 2502.5MHz		
2490.60	29.0	29.1	-45.2	-43.9	4.1	10.6	0.0	-38.7	-37.4	-25.0	13.7	12.4	113	341	100	273	Lower, RB 1-0, Tx 2502.5MHz		
2570.00	47.7	50.2	-25.8	-22.3	4.2	10.6	0.0	-19.4	-15.9	-10.0	9.4	5.9	112	338	100	282	Upper, RB 1-24, Tx 2567.5MHz		
2575.00	25.8	26.4	-47.7	-46.1	4.2	10.6	0.0	-41.3	-39.7	-13.0	28.3	26.7	112	338	100	282	Upper, RB 1-24, Tx 2567.5MHz		
2579.50	31.5	32.1	-42.0	-40.4	4.2	10.6	0.0	-35.6	-34.0	-25.0	10.6	9.0	112	338	100	282	Upper, RB 1-24, Tx 2567.5MHz		

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-12.75GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-12.75GHz)

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

Detector : Spectrum Analyzer RMS Average (RBW: 100kHz, VBW: 300kHz) for within 1MHz from band-edge
Spectrum Analyzer RMS Average (RBW: 1MHz, VBW: 3MHz) for other frequencies

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Band Edge (Radiated)

LTE Band VII

Report No. 10636726H
Test place Ise EMC Lab. No.2 Semi Anechoic Chamber
Date 01/30/2015
Temperature / Humidity 21deg. C / 28 % RH
Engineer Hironobu Ohnishi
Mode Tx LTE(16QAM), BW 5MHz

[16QAM, 100% RB allocation]

Frequency	Rx SA/TR		Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks
	Reading [dBuV]		Reading [dBm]		Cable Loss [dB]	Ant. Gain [dBi]	Atten. Loss [dB]	(EIRP) [dBm]		(EIRP) [dBm]			Rx Ant.	Turn Table	Rx Ant.	Turn Table	
	[MHz]	HOR	VER	HOR				VER	HOR				VER	[dB]	HOR	VER	
2500.00	42.8	41.4	-31.4	-31.6	4.1	10.7	0.0	-24.8	-25.1	-10.0	14.8	15.1	113	341	100	273	Lower, RB 25-0, Tx 2502.5MHz
2495.70	39.9	39.8	-34.3	-33.2	4.1	10.7	0.0	-27.8	-26.7	-13.0	14.8	13.7	113	341	100	273	Lower, RB 25-0, Tx 2502.5MHz
2493.50	36.8	36.1	-37.4	-36.9	4.1	10.6	0.0	-30.9	-30.4	-25.0	5.9	5.4	113	341	100	273	Lower, RB 25-0, Tx 2502.5MHz
2570.00	40.2	41.4	-33.3	-31.1	4.2	10.6	0.0	-26.9	-24.7	-10.0	16.9	14.7	112	338	100	282	Upper, RB 25-0, Tx 2567.5MHz
2575.60	35.0	35.0	-38.5	-37.5	4.2	10.6	0.0	-32.1	-31.1	-13.0	19.1	18.1	112	338	100	282	Upper, RB 25-0, Tx 2567.5MHz
2576.00	34.6	35.5	-39.0	-37.1	4.2	10.6	0.0	-32.5	-30.7	-25.0	7.5	5.7	112	338	100	282	Upper, RB 25-0, Tx 2567.5MHz

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-12.75GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-12.75GHz)

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

Detector : Spectrum Analyzer RMS Average (RBW: 100kHz, VBW: 300kHz) for within 1MHz from band-edge

Spectrum Analyzer RMS Average (RBW: 1MHz, VBW: 3MHz) for other frequencies

[16QAM, 1 RB]

Frequency	Rx SA/TR		Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks
	Reading [dBuV]		Reading [dBm]		Cable Loss [dB]	Ant. Gain [dBi]	Atten. Loss [dB]	(EIRP) [dBm]		(EIRP) [dBm]	[dB]		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]	
	HOR	VER	HOR	VER				HOR	VER								
[MHz]	HOR	VER	HOR	VER	[dB]	[dBi]	[dB]	HOR	VER	[dBm]	HOR	VER	[cm]	[deg.]	[cm]	[deg.]	
2500.00	49.4	49.1	-24.8	-23.9	4.1	10.7	0.0	-18.2	-17.4	-10.0	8.2	7.4	113	341	100	273	Lower, RB 1-0, Tx 2502.5MHz
2496.00	34.6	34.3	-39.6	-38.7	4.1	10.7	0.0	-33.1	-32.2	-13.0	20.1	19.2	113	341	100	273	Lower, RB 1-0, Tx 2502.5MHz
2490.40	28.6	27.7	-45.6	-45.3	4.1	10.6	0.0	-39.1	-38.8	-25.0	14.1	13.8	113	341	100	273	Lower, RB 1-0, Tx 2502.5MHz
2570.00	47.7	48.2	-25.9	-24.3	4.2	10.6	0.0	-19.4	-17.9	-10.0	9.4	7.9	112	338	100	282	Upper, RB 1-24, Tx 2567.5MHz
2575.00	25.4	25.5	-48.2	-47.0	4.2	10.6	0.0	-41.7	-40.6	-13.0	28.7	27.6	112	338	100	282	Upper, RB 1-24, Tx 2567.5MHz
2579.60	31.4	32.1	-42.2	-40.4	4.2	10.6	0.0	-35.7	-34.0	-25.0	10.7	9.0	112	338	100	282	Upper, RB 1-24, Tx 2567.5MHz

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-12.75GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-12.75GHz)

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

Detector : Spectrum Analyzer RMS Average (RBW: 100kHz, VBW: 300kHz) for within 1MHz from band-edge

Spectrum Analyzer RMS Average (RBW: 1MHz, VBW: 3MHz) for other frequencies

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Band Edge (Radiated)

LTE Band XVII

Report No. 10636726H
Test place Ise EMC Lab. No.2 Semi Anechoic Chamber
Date 01/30/2015
Temperature / Humidity 21deg. C / 28 % RH
Engineer Hironobu Ohnishi
Mode Tx LTE(QPSK), BW 5MHz

[QPSK, 100% RB allocation]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Atten. Loss [dB]	Result (ERP) [dBm]		Limit (ERP) [dBm]	Margin [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER				HOR	VER		HOR	VER	Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]	
704.00	34.9	37.3	-21.1	-15.2	5.3	2.2	9.9	-36.2	-30.4	-13.0	23.2	17.4	126	177	166	315	RB 25-0, Tx 706.5MHz
716.00	35.0	33.4	-20.6	-18.0	5.3	2.2	9.9	-35.9	-33.3	-13.0	22.9	20.3	126	179	163	316	RB 25-0, Tx 713.5MHz

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss -2.15

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-20GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-20GHz)

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

Detector : Spectrum analyzer RMS Average (RBW: 30kHz , VBW: 100kHz)

[QPSK, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Atten. Loss [dB]	Result (ERP) [dBm]		Limit (ERP) [dBm]	Margin [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER				HOR	VER		HOR	VER	Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]	
704.00	38.4	36.3	-17.6	-16.2	5.3	2.2	9.9	-32.7	-31.4	-13.0	19.7	18.4	126	177	166	315	RB 1-0, Tx 706.5MHz
716.00	38.9	37.1	-16.7	-14.3	5.3	2.2	9.9	-32.0	-29.6	-13.0	19.0	16.6	126	179	163	316	RB 1-24, Tx 713.5MHz

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss -2.15

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-20GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-20GHz)

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

Detector : Spectrum analyzer RMS Average (RBW: 30kHz , VBW: 100kHz)

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Band Edge (Radiated)

LTE Band XVII

Report No. 10636726H
Test place Ise EMC Lab. No.2 Semi Anechoic Chamber
Date 01/30/2015
Temperature / Humidity 21deg. C / 28 % RH
Engineer Hironobu Ohnishi
Mode Tx LTE(16QAM), BW 5MHz

[16QAM, 100% RB allocation]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Atten. Loss [dB]	Result (ERP) [dBm]		Limit (ERP) [dBm]	Margin [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER				HOR	VER		HOR	VER	Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]	
704.00	33.3	35.3	-22.7	-17.2	5.3	2.2	9.9	-37.9	-32.4	-13.0	24.9	19.4	126	177	166	315	RB 25-0, Tx 706.5MHz
716.00	33.1	33.0	-22.5	-18.5	5.3	2.2	9.9	-37.7	-33.7	-13.0	24.7	20.7	126	179	163	316	RB 25-0, Tx 713.5MHz

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss -2.15

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-20GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-20GHz)

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

Detector : Spectrum analyzer RMS Average (RBW: 30kHz, VBW: 100kHz)

[16QAM, 1 RB]

Frequency [MHz]	Rx SA/TR Reading [dBuV]		Tx SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Atten. Loss [dB]	Result (ERP) [dBm]		Limit (ERP) [dBm]	Margin [dB]		Horizontal		Vertical		Remarks
	HOR	VER	HOR	VER				HOR	VER		HOR	VER	Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]	
704.00	37.7	37.3	-18.2	-15.2	5.3	2.2	9.9	-33.4	-30.4	-13.0	20.4	17.4	126	177	166	315	RB 1-0, Tx 706.5MHz
716.00	37.6	34.9	-18.0	-16.5	5.3	2.2	9.9	-33.2	-31.8	-13.0	20.2	18.8	126	179	163	316	RB 1-24, Tx 713.5MHz

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss -2.15

Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-20GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-20GHz)

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

Detector : Spectrum analyzer RMS Average (RBW: 30kHz, VBW: 100kHz)

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Spurious Emission (Conducted)
W-CDMA Band IV

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 02/05/2015
Temperature/ Humidity : 21deg. C / 34% RH
Engineer : Yutaka Yoshida
Mode : Tx W-CDMA(RMC12.2kbps), All Up Bits

Limit Line

Tx Frequency [MHz]	Limit [dBm]	Atten. [dB]	Cable Loss [dB]	Limit Line *1) *2) [dBm]
1712.4	-13.0	10.02	6.77	-29.8
1732.6	-13.0	10.02	6.77	-29.8
1752.6	-13.0	10.02	6.78	-29.8

Sample Calculation : Limit Line = Limit - Atten. - Cable Loss

*1)9k-150kHz : RBW factor was applied to Limit Line. (RBW factor= $10\log(1\text{kHz}/1\text{MHz})$)

*2)150kHz-30MHz : RBW factor was applied to Limit Line. (RBW factor= $10\log(10\text{kHz}/1\text{MHz})$)

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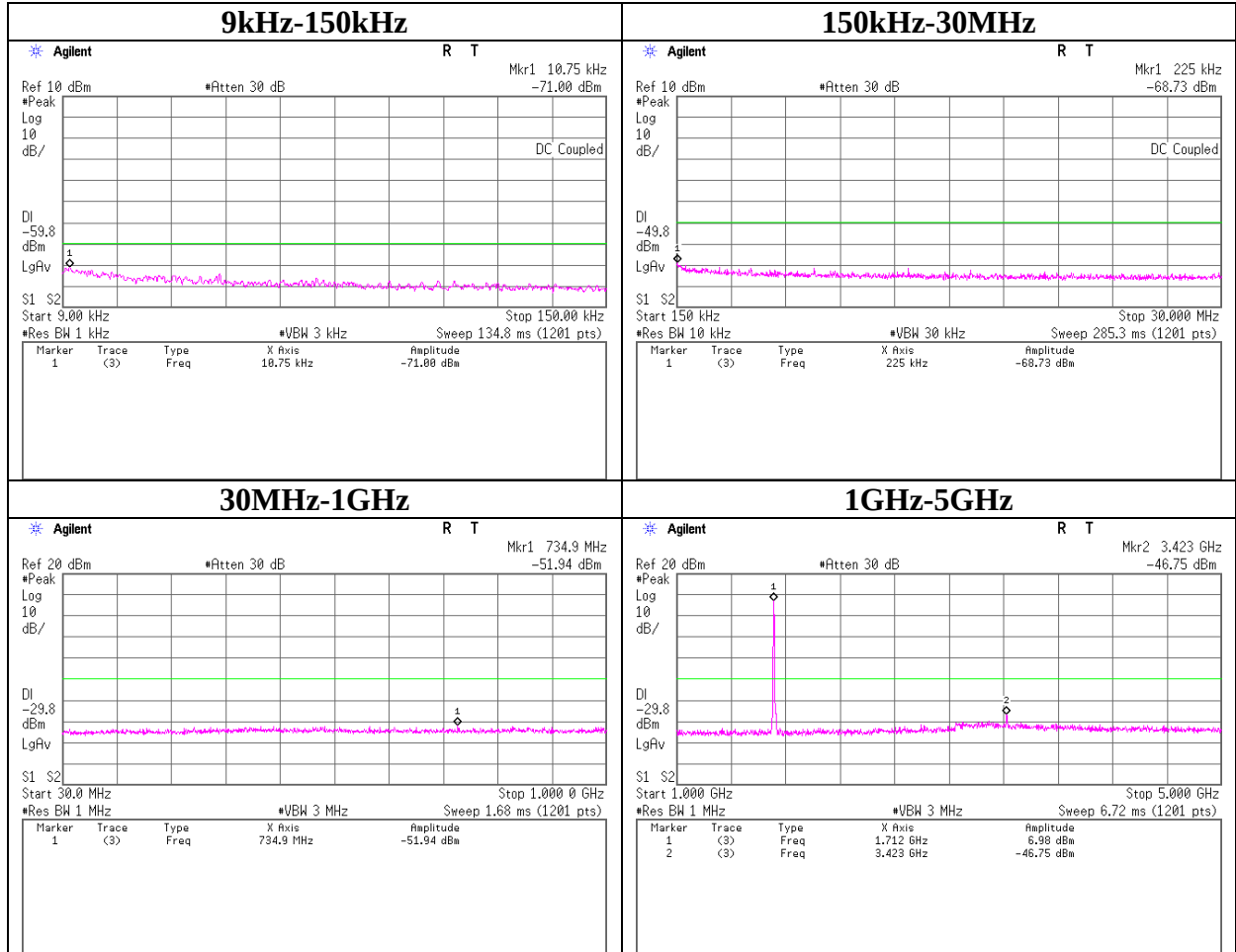
Ise EMC Lab.

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Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Spurious Emission (Conducted)
W-CDMA Band IV
Tx:1712.4MHz



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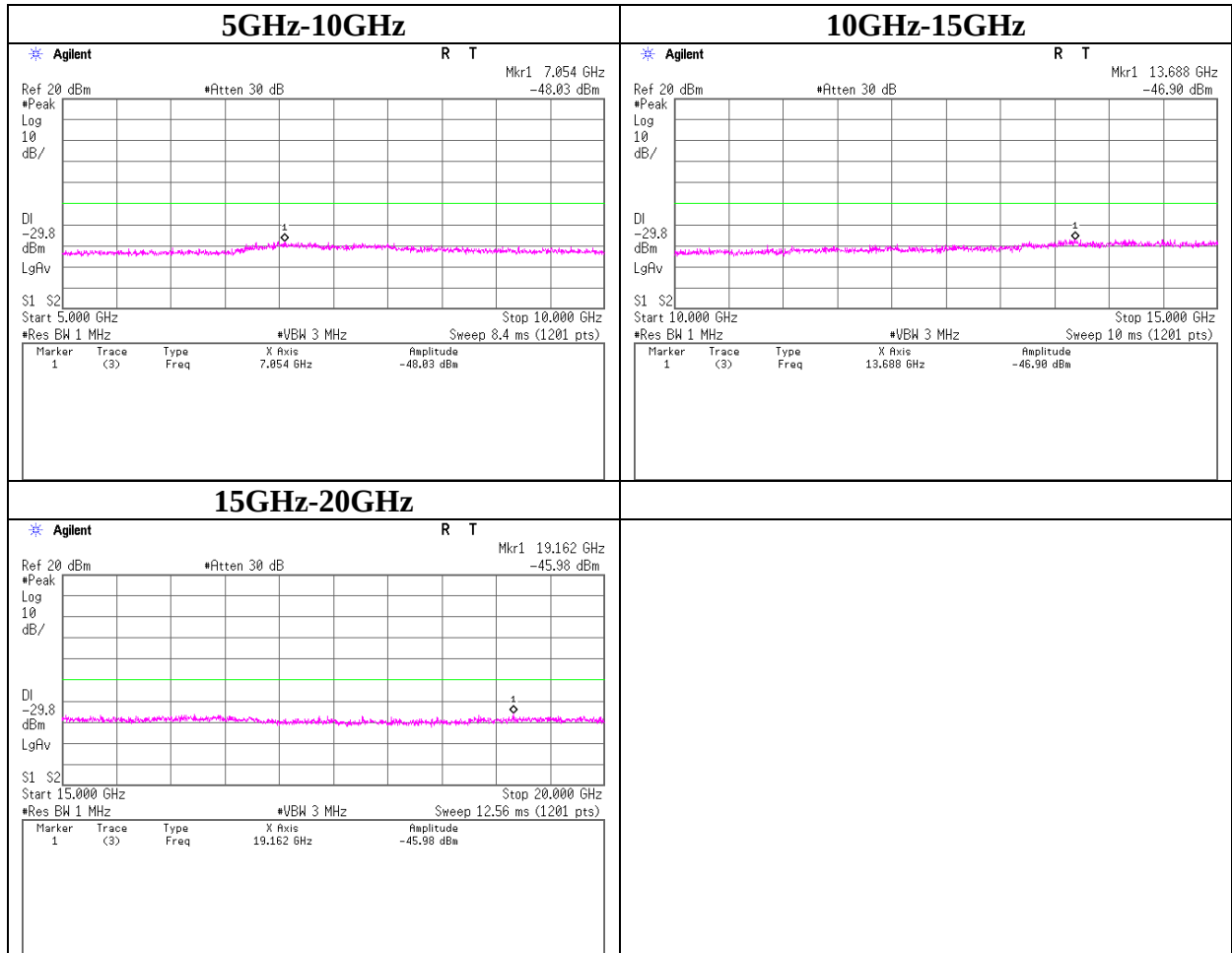
Ise EMC Lab.

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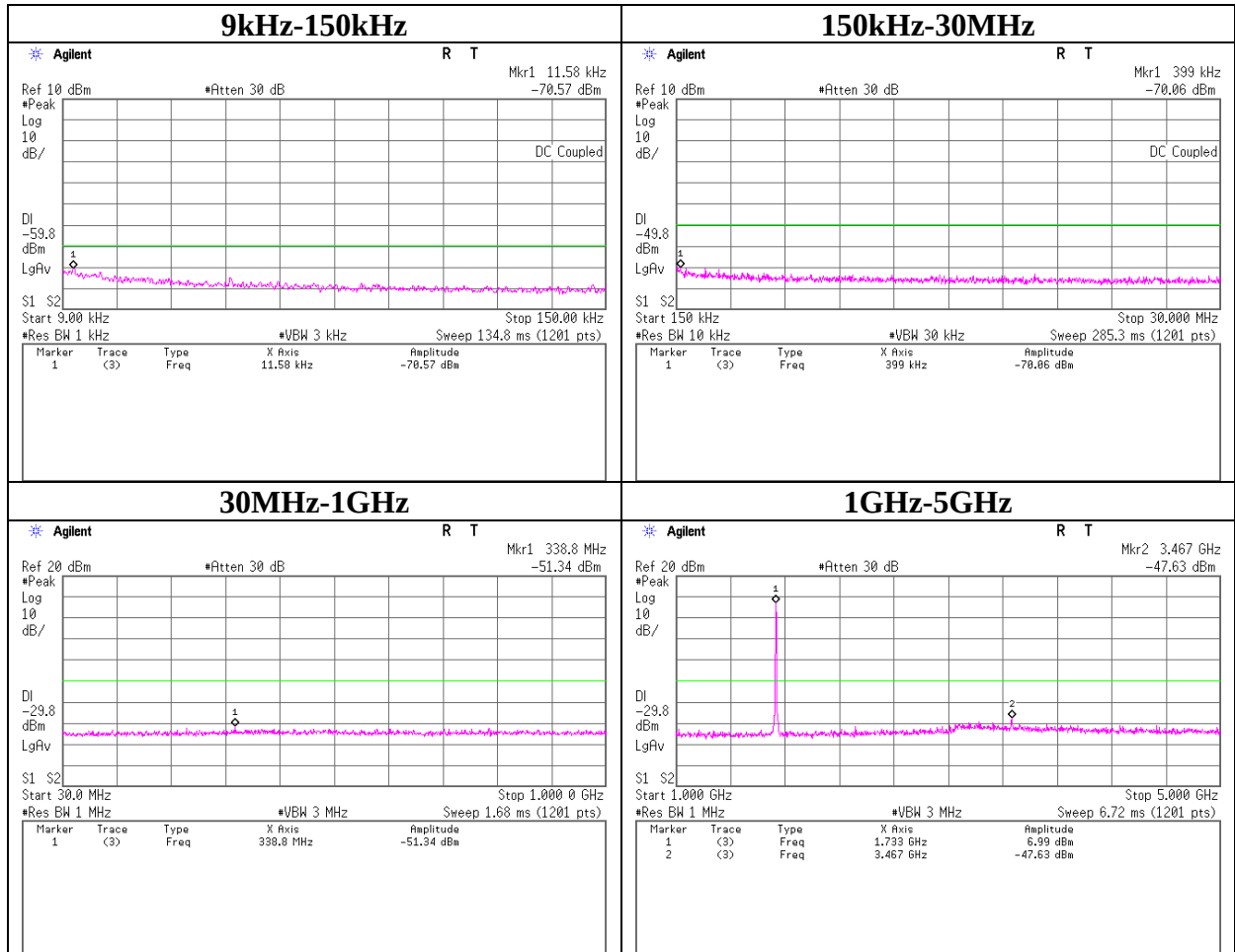
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Spurious Emission (Conducted)
W-CDMA Band IV
Tx:1712.4MHz



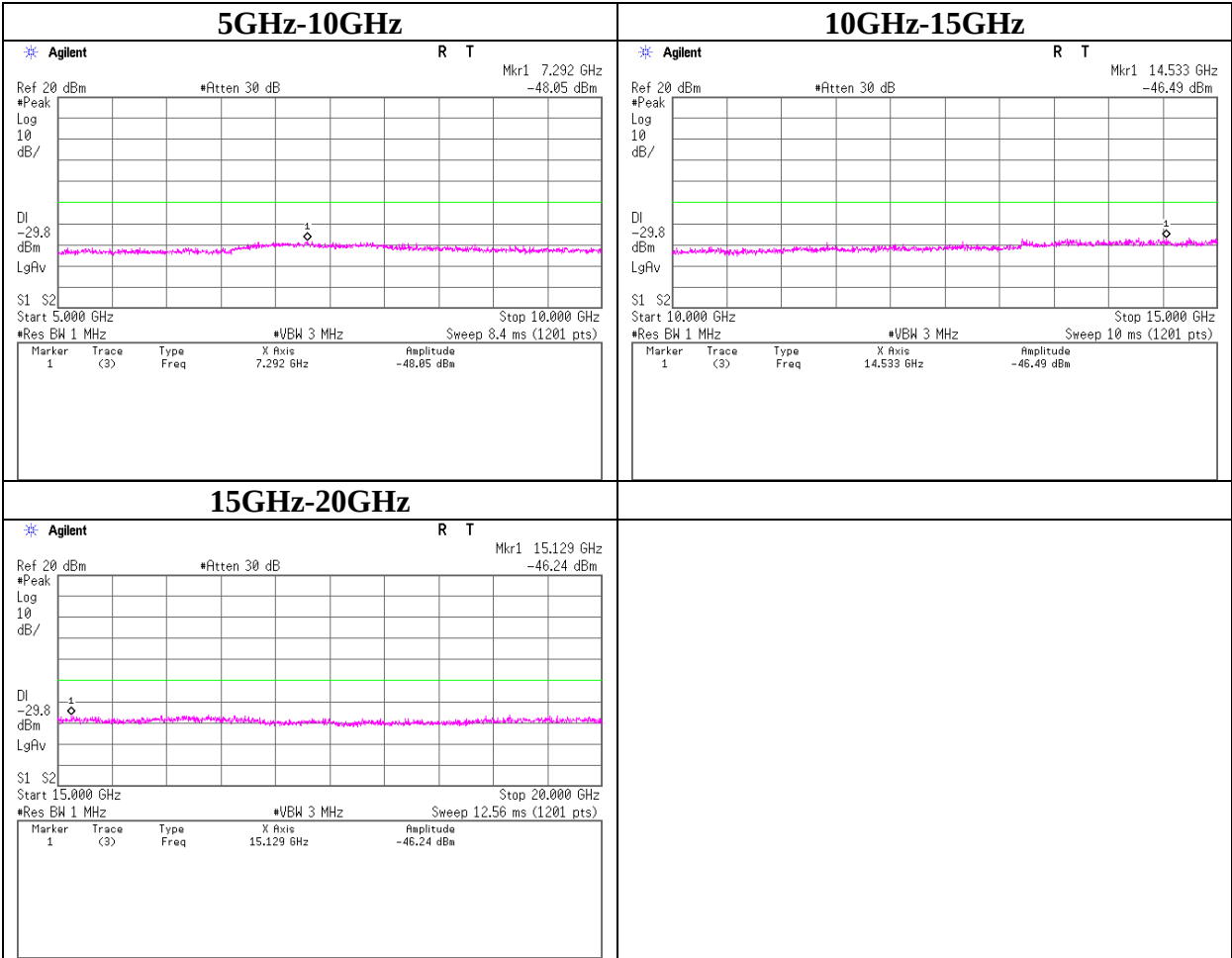
Spurious Emission (Conducted)
W-CDMA Band IV
Tx:1732.6MHz



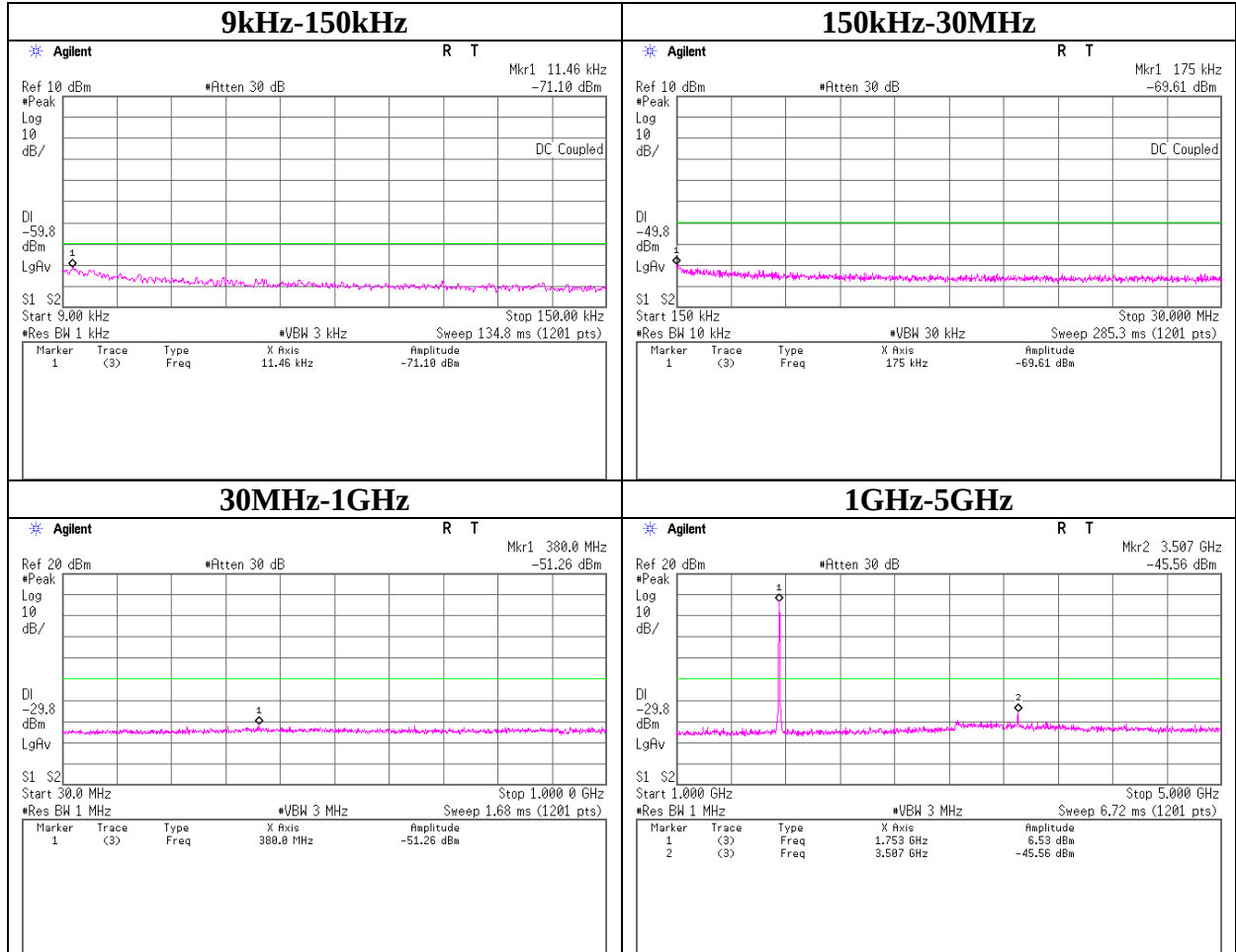
Spurious Emission (Conducted)

W-CDMA Band IV

Tx:1732.6MHz



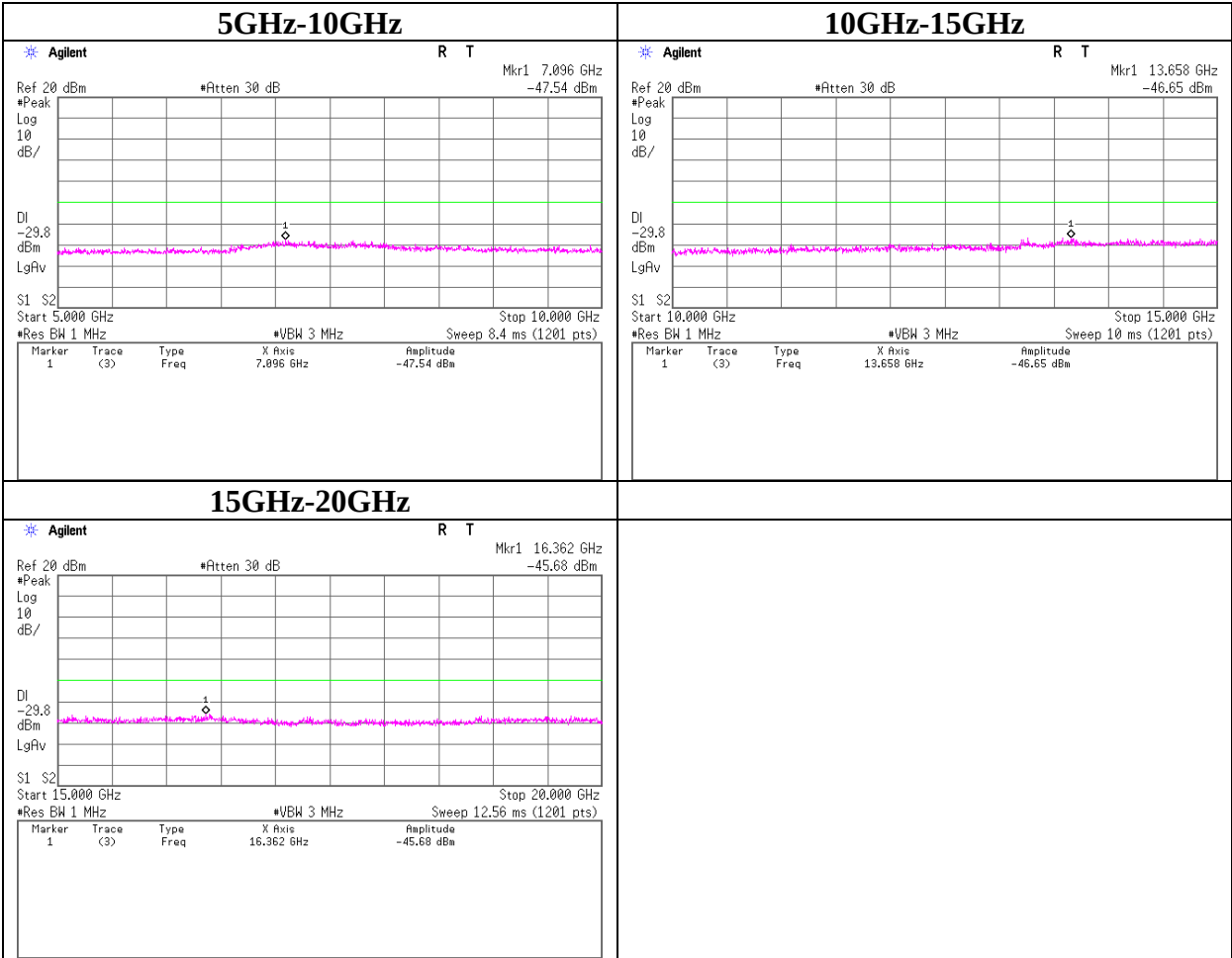
Spurious Emission (Conducted)
W-CDMA Band IV
Tx:1752.6MHz



Spurious Emission (Conducted)

W-CDMA Band IV

Tx:1752.6MHz



Spurious Emission (Conducted)
LTE Band IV

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 02/05/2015
Temperature/ Humidity : 21deg. C / 34% RH
Engineer : Yutaka Yoshida
Mode : Tx LTE(QPSK), BW 3MHz
Low ch RB1-14, Mid ch RB1-14, High ch RB 1-0

Limit Line

Tx Frequency [MHz]	Limit [dBm]	Atten. [dB]	Cable Loss [dB]	Limit Line *1) *2) [dBm]
1711.5	-13.0	10.02	6.77	-29.8
1732.5	-13.0	10.02	6.77	-29.8
1753.5	-13.0	10.02	6.78	-29.8

Sample Calculation : Limit Line = Limit - Atten. - Cable Loss

*1)9k-150kHz : RBW factor was applied to Limit Line. (RBW factor= $10\log(1\text{kHz}/1\text{MHz})$)

*2)150kHz-30MHz : RBW factor was applied to Limit Line. (RBW factor= $10\log(10\text{kHz}/1\text{MHz})$)

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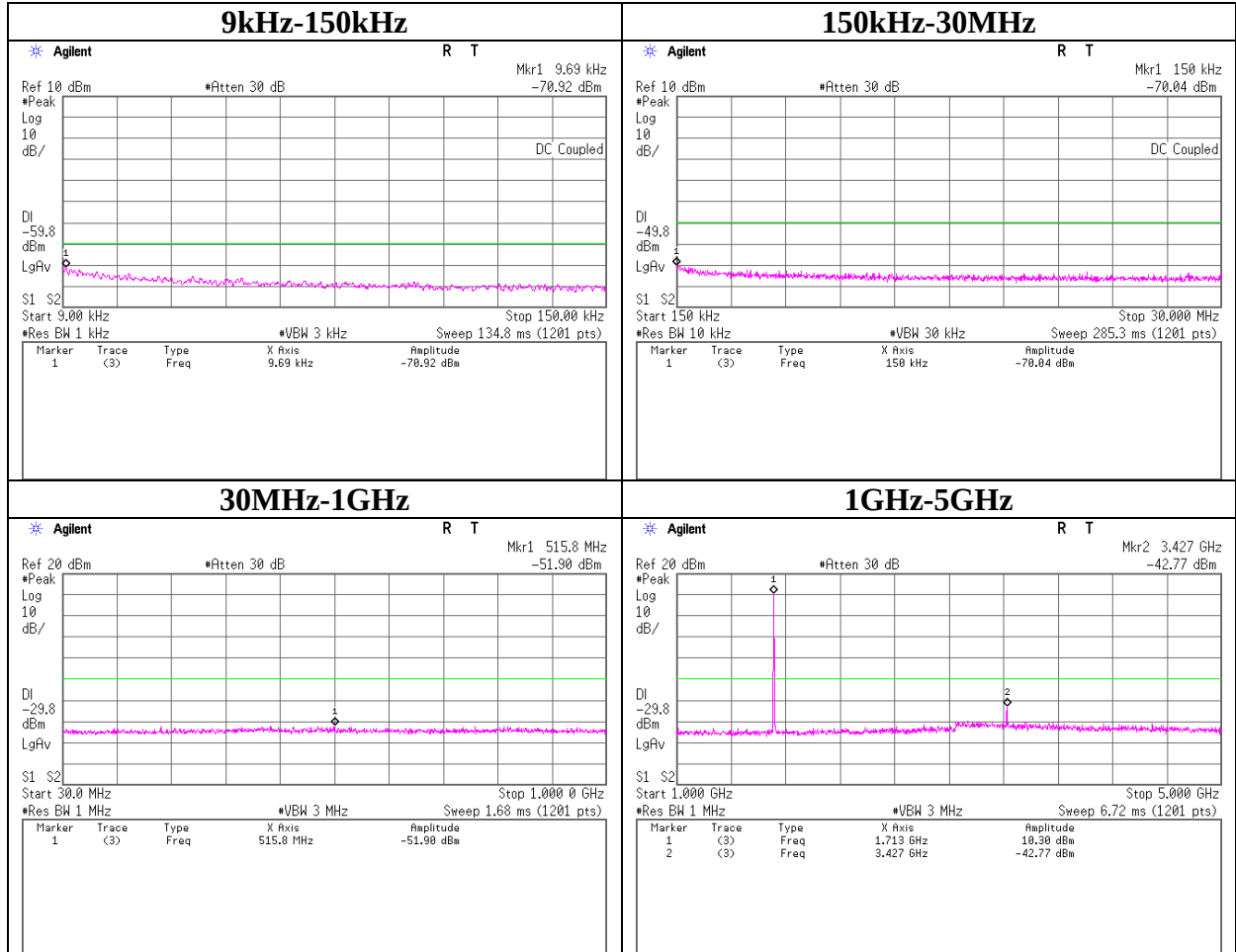
Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Spurious Emission (Conducted)
LTE Band IV
Tx:1711.5MHz



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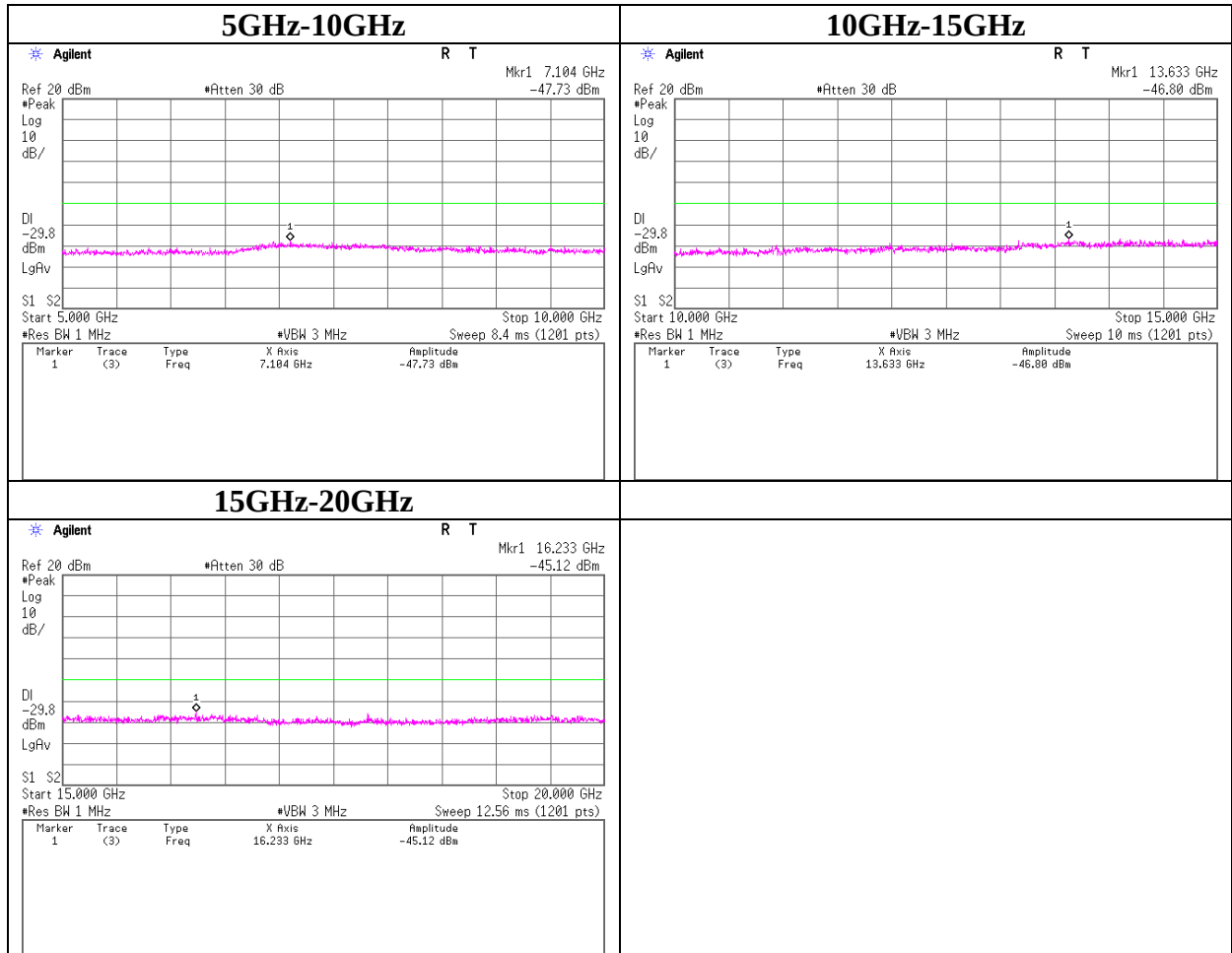
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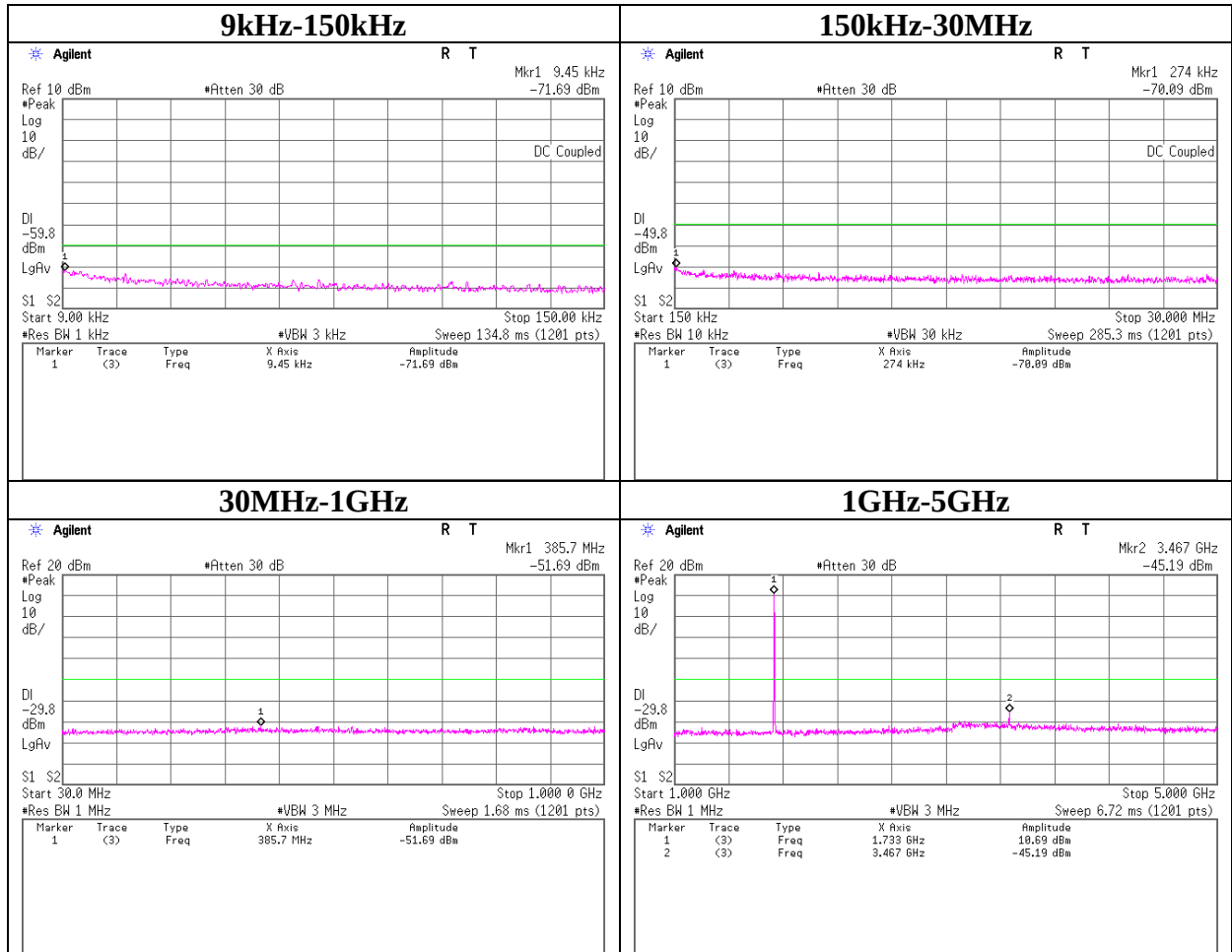
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Facsimile : +81 596 24 8124

Spurious Emission (Conducted)
LTE Band IV
Tx:1711.5MHz



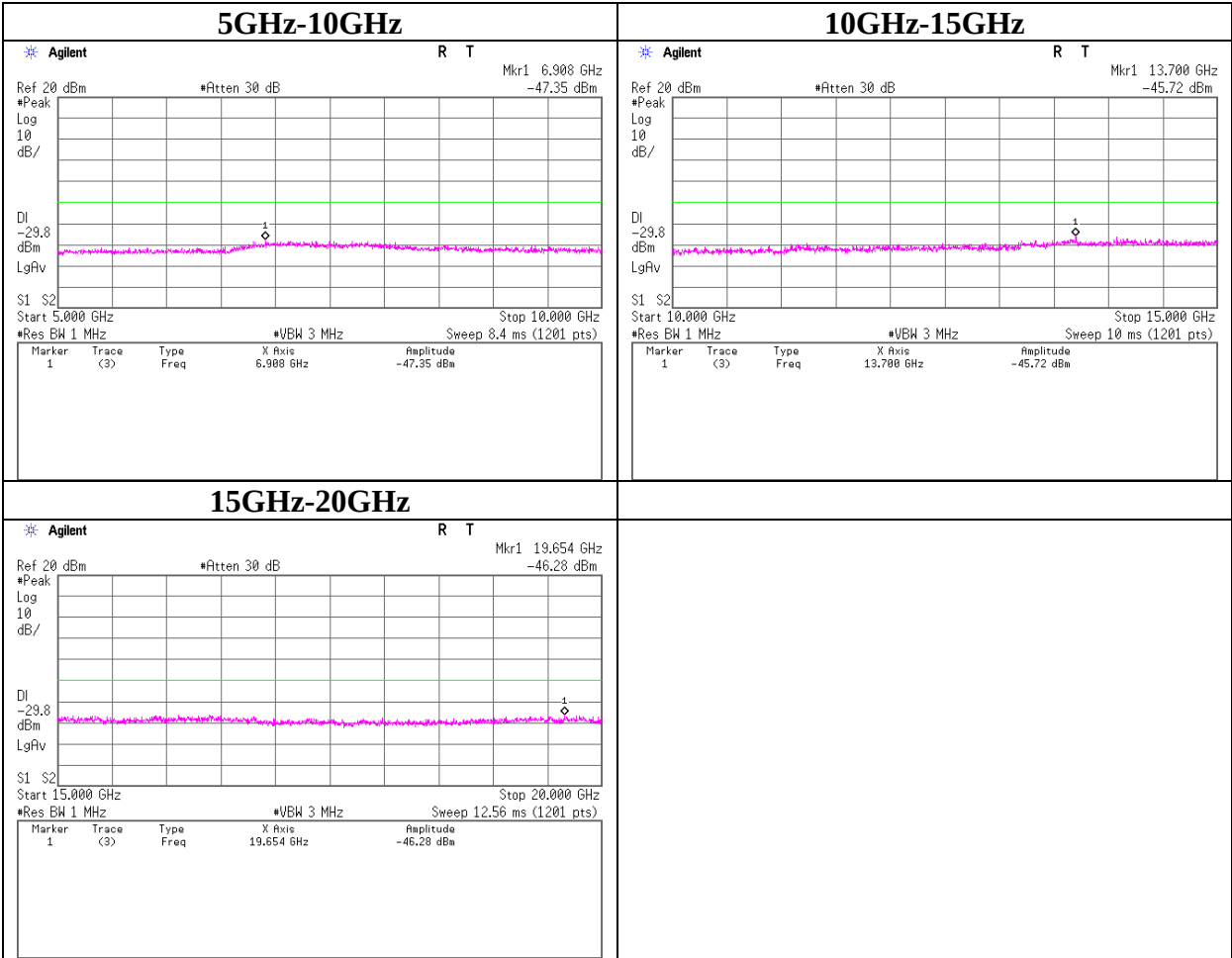
Spurious Emission (Conducted)
LTE Band IV
Tx:1732.5MHz



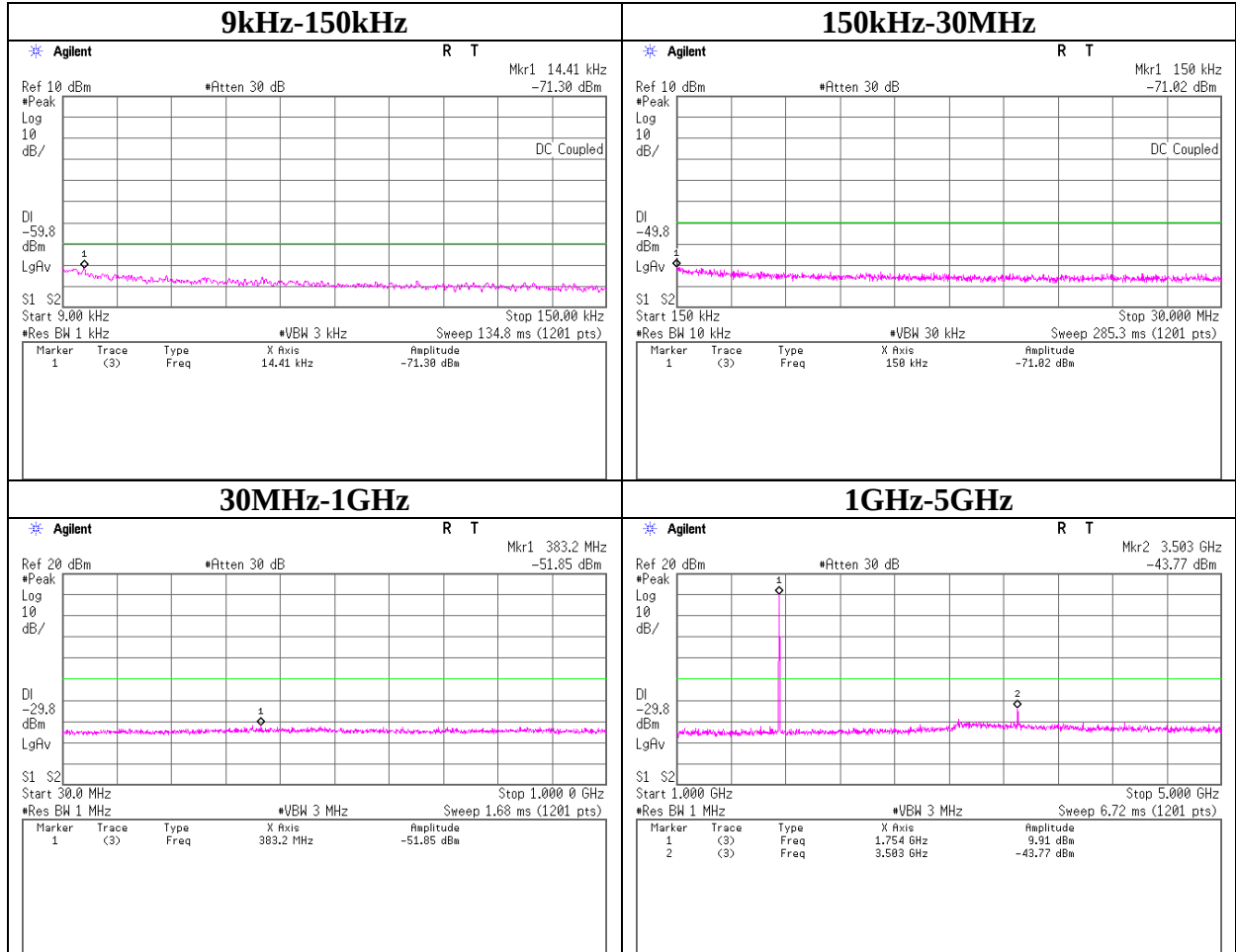
Spurious Emission (Conducted)

LTE Band IV

Tx:1732.5MHz



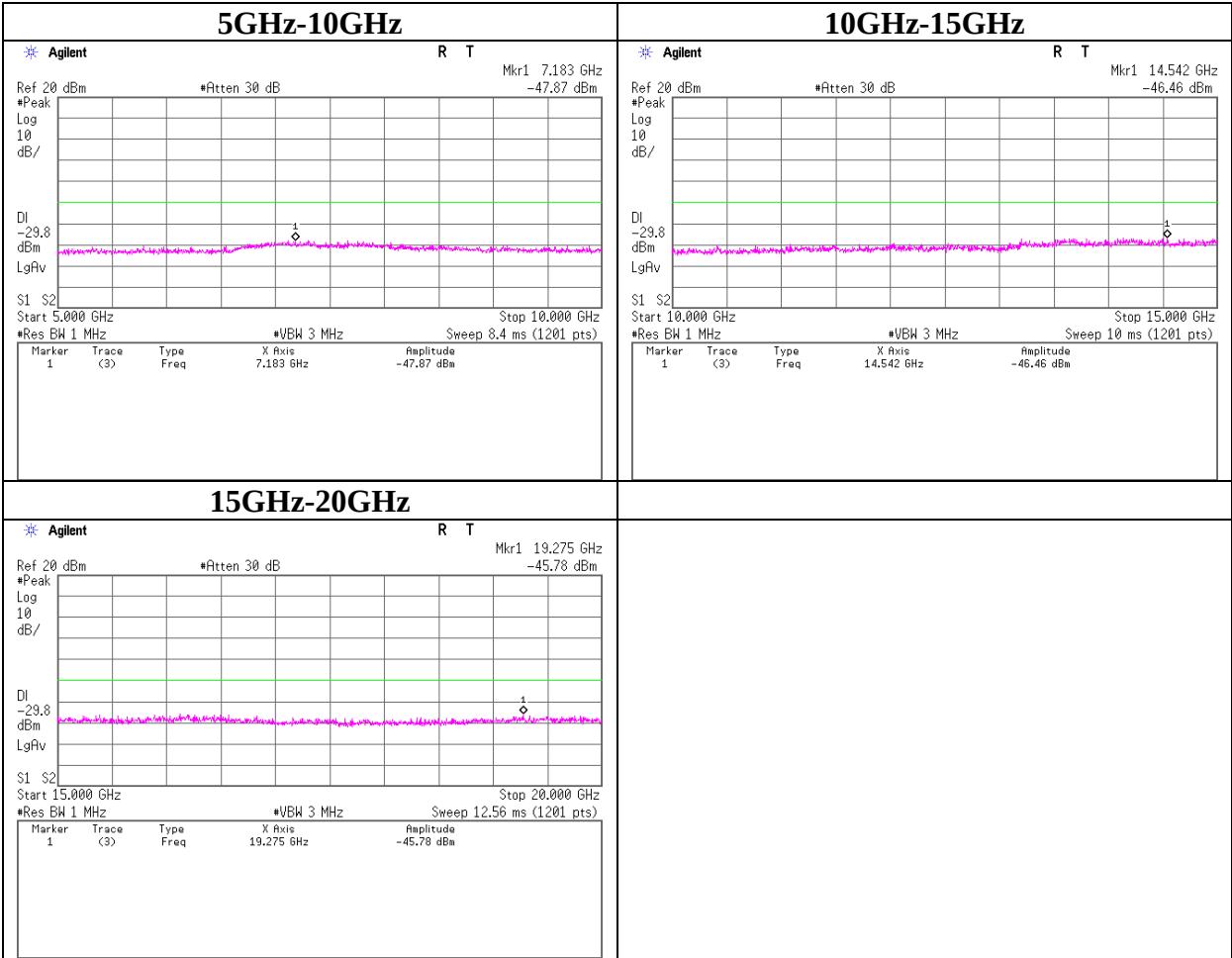
Spurious Emission (Conducted)
LTE Band IV
Tx:1753.5MHz



Spurious Emission (Conducted)

LTE Band IV

Tx:1753.5MHz



Spurious Emission (Conducted)
LTE Band VII

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 02/05/2015
Temperature/ Humidity : 21deg. C / 34% RH
Engineer : Yutaka Yoshida
Mode : Tx LTE(QPSK), BW 10MHz
Low ch RB1-49, Mid ch RB1-49, High ch RB 1-49

Limit Line

Tx Frequency [MHz]	Limit [dBm]	Atten. [dB]	Cable Loss [dB]	Limit Line *1) *2) [dBm]
2505.0	-25.0	10.02	6.93	-42.0
2535.0	-25.0	10.02	6.94	-42.0
2565.0	-25.0	10.02	6.94	-42.0

Sample Calculation : Limit Line = Limit - Atten. - Cable Loss

*1)9k-150kHz : RBW factor was applied to Limit Line. (RBW factor= $10\log(1\text{kHz}/1\text{MHz})$)

*2)150kHz-30MHz : RBW factor was applied to Limit Line. (RBW factor= $10\log(10\text{kHz}/1\text{MHz})$)

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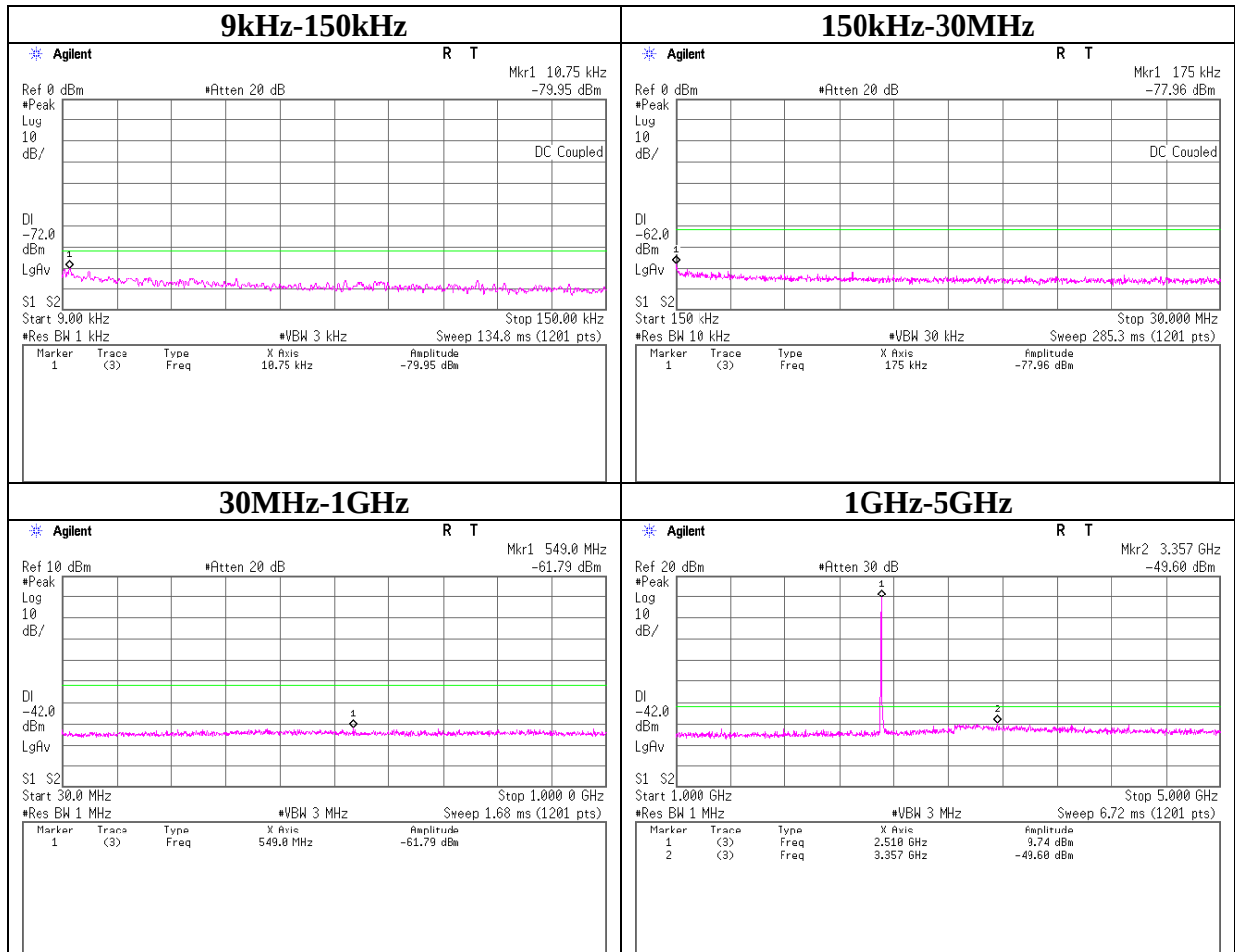
Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

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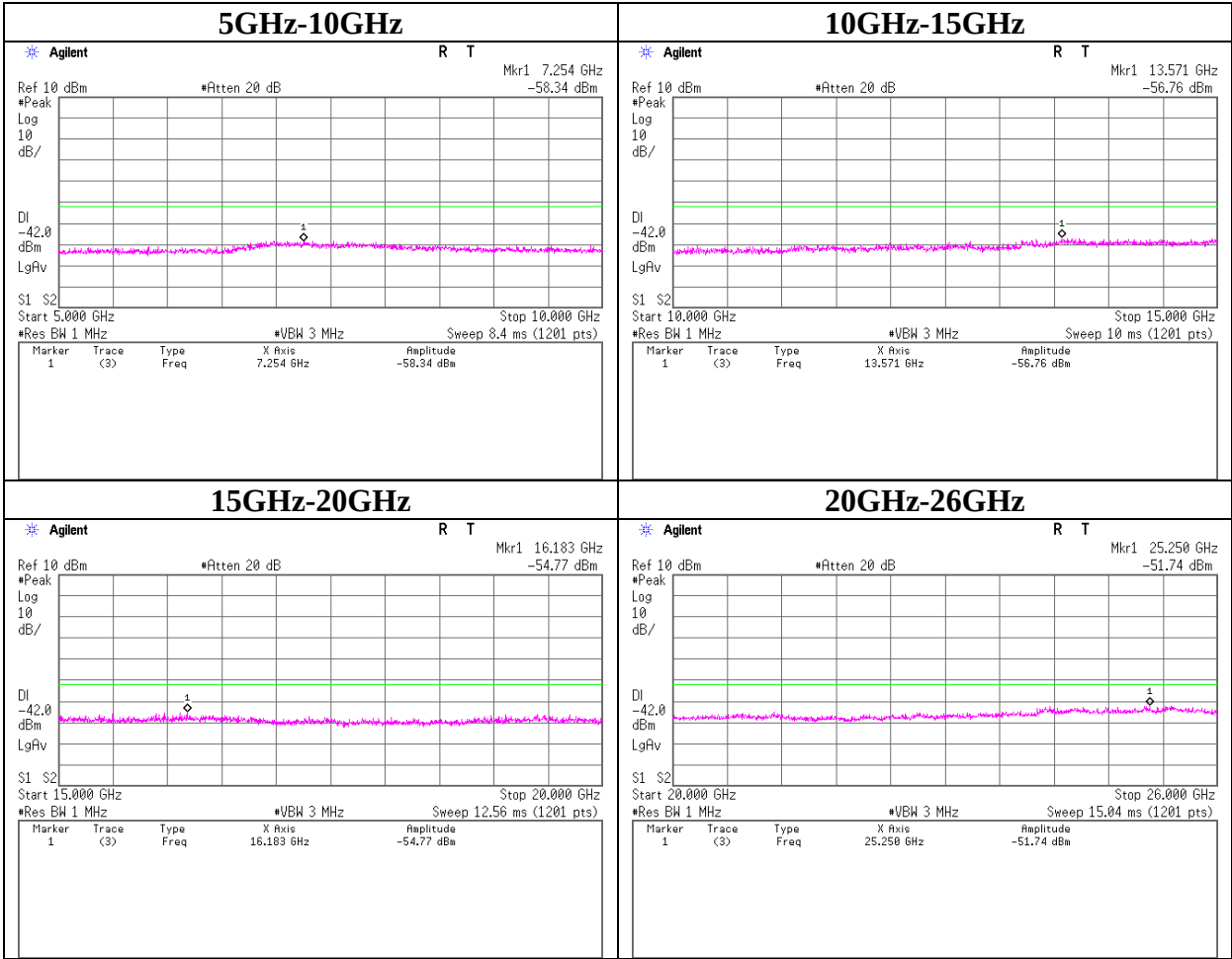
Spurious Emission (Conducted)
LTE Band VII
Tx:2505.0MHz



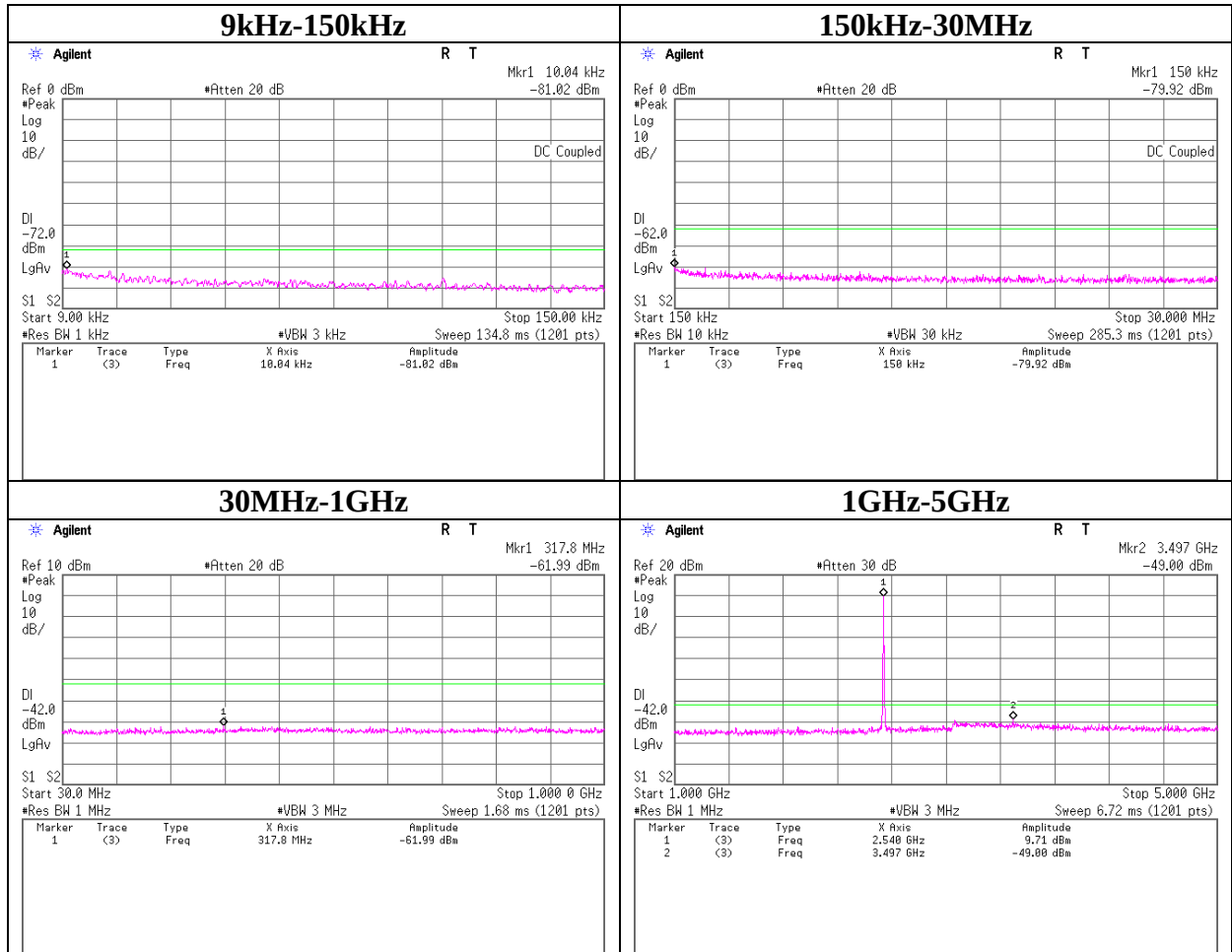
Spurious Emission (Conducted)

LTE Band VII

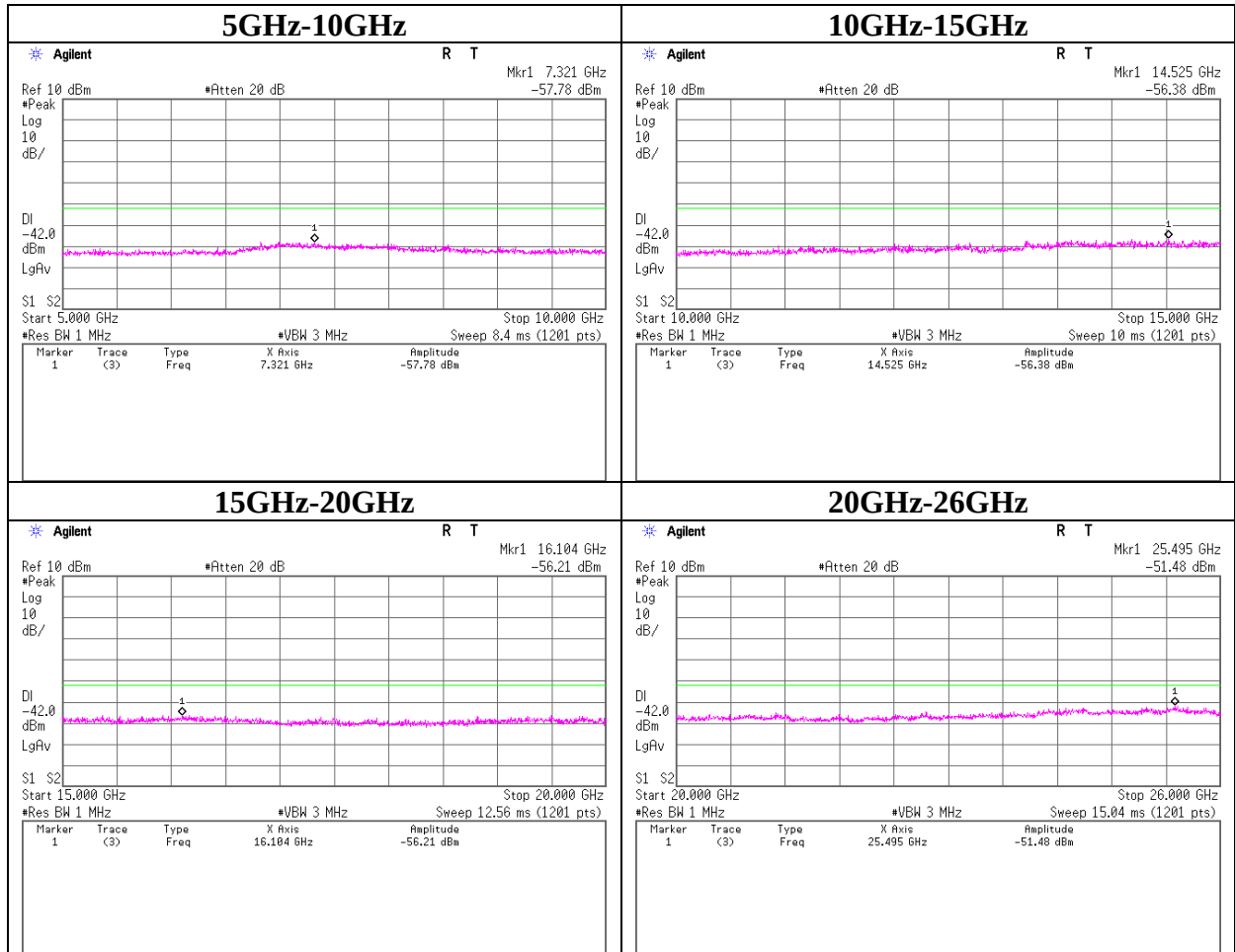
Tx:2505.0MHz



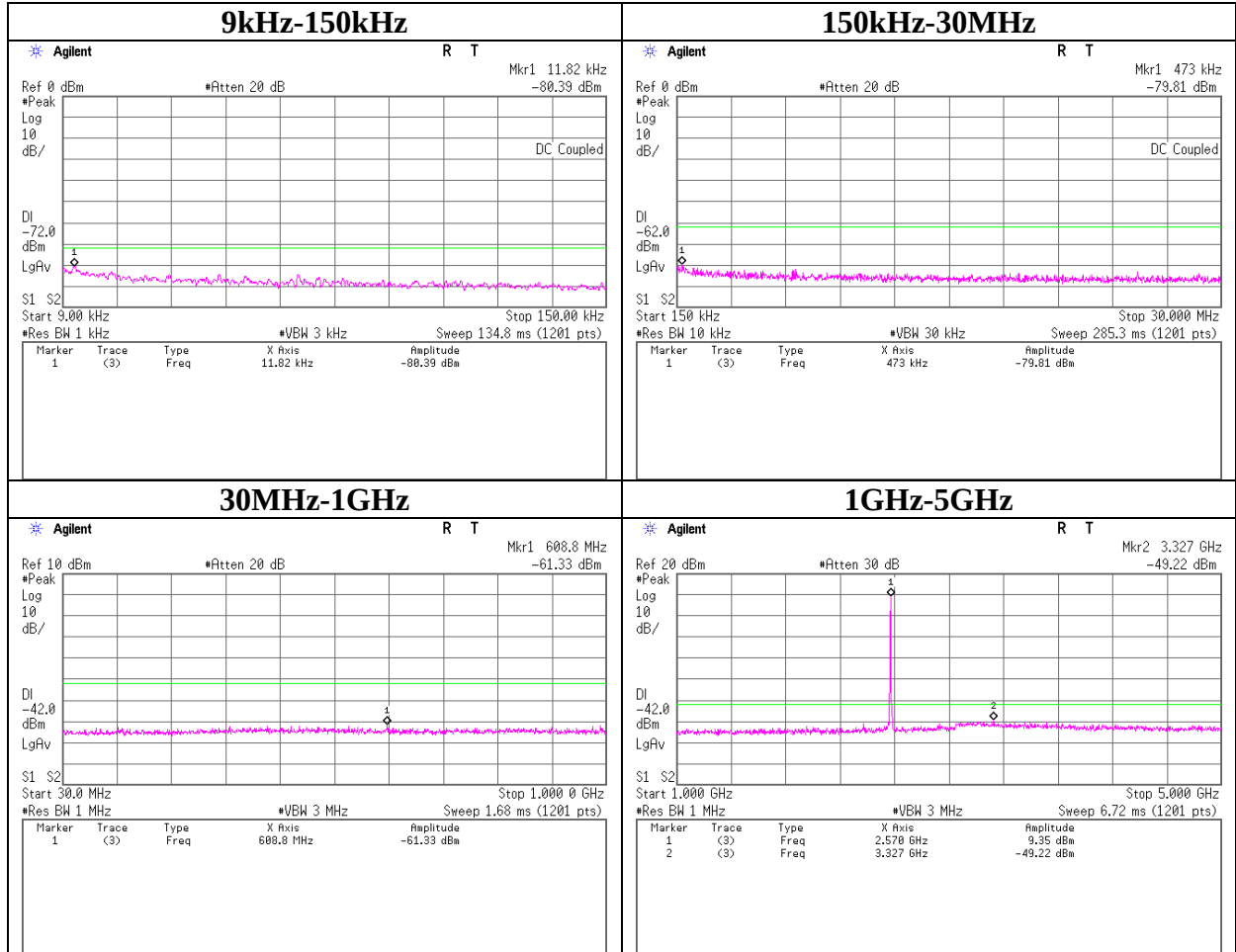
Spurious Emission (Conducted)
LTE Band VII
Tx:2535.0MHz



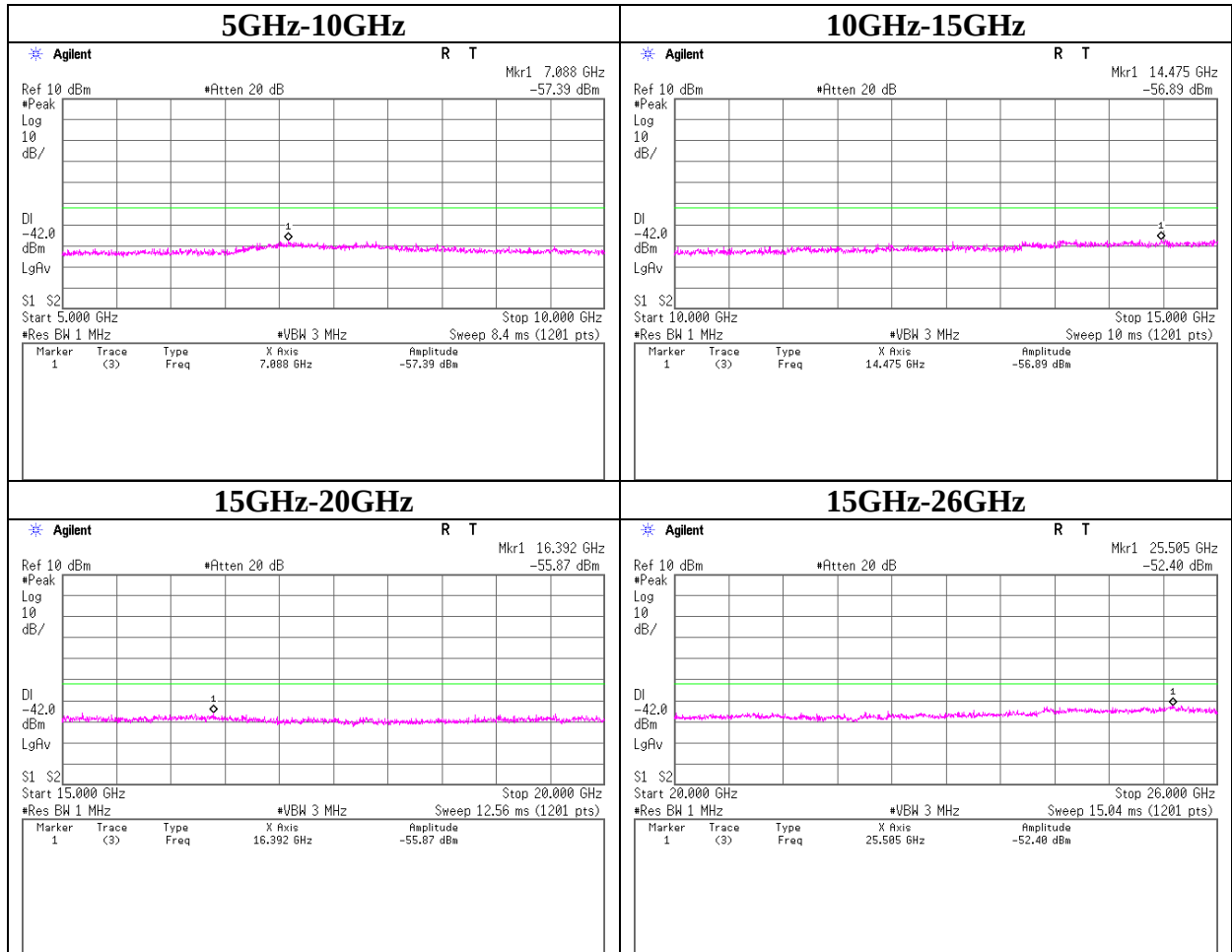
Spurious Emission (Conducted)
LTE Band VII
Tx:2535.0MHz



Spurious Emission (Conducted)
LTE Band VII
Tx:2565.0MHz



Spurious Emission (Conducted)
LTE Band IV
Tx:2565.0MHz



Spurious Emission (Conducted)
LTE Band XVII

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 02/05/2015
Temperature/ Humidity : 21deg. C / 34% RH
Engineer : Yutaka Yoshida
Mode : Tx LTE(QPSK), BW 10MHz
Low ch RB1-49, Mid ch RB1-0, High ch RB 1-49

Limit Line

Tx Frequency [MHz]	Limit [dBm]	Atten. [dB]	Cable Loss [dB]	Limit Line *1) *2) [dBm]
709.0	-13.0	10.00	6.57	-29.6
710.0	-13.0	10.00	6.57	-29.6
711.0	-13.0	10.00	6.57	-29.6

Sample Calculation : Limit Line = Limit - Atten. - Cable Loss

*1)9k-150kHz : RBW factor was applied to Limit Line. (RBW factor= $10\log(1\text{kHz}/100\text{kHz})$)

*2)150kHz-30MHz : RBW factor was applied to Limit Line. (RBW factor= $10\log(10\text{kHz}/100\text{kHz})$)

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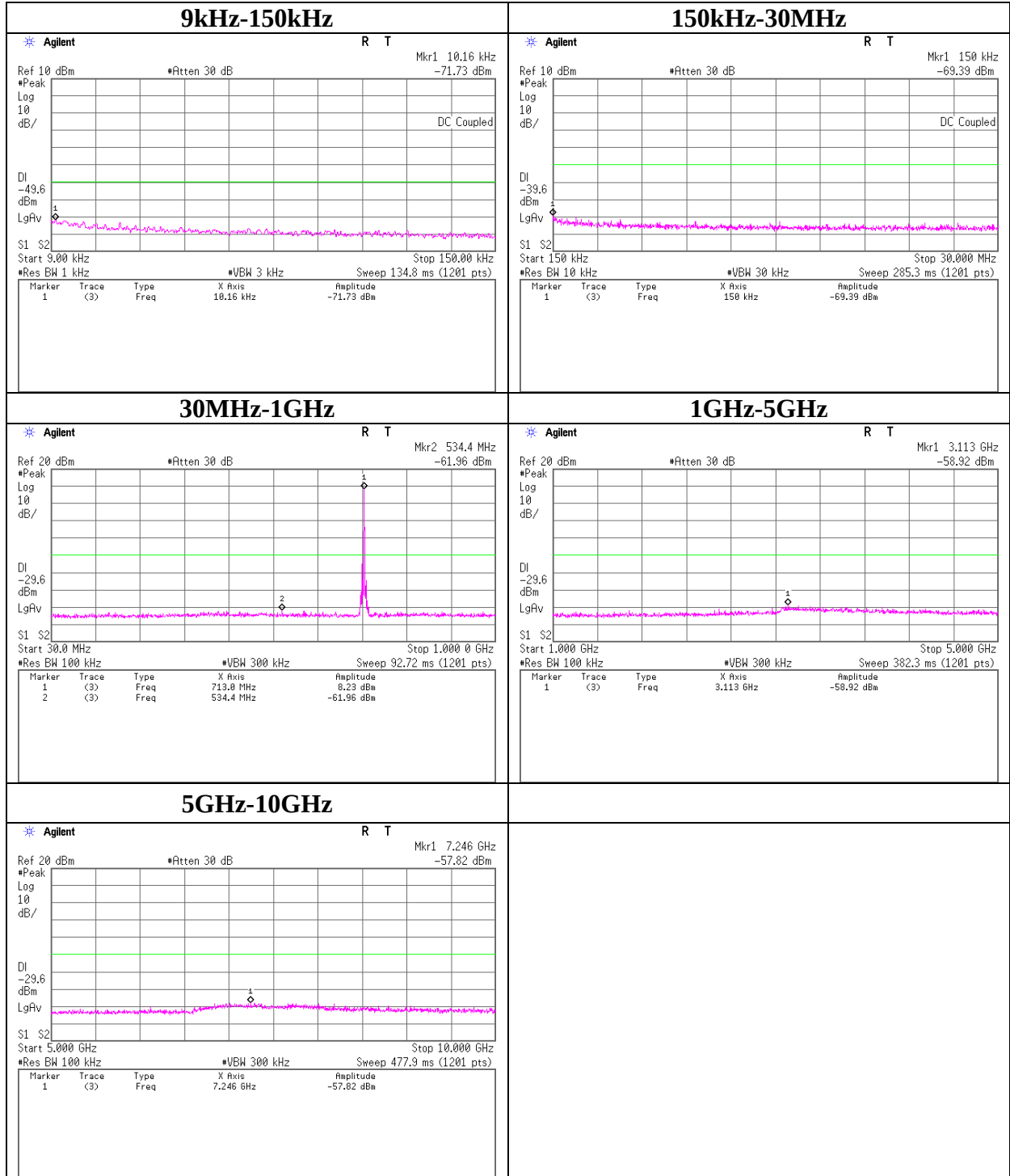
Ise EMC Lab.

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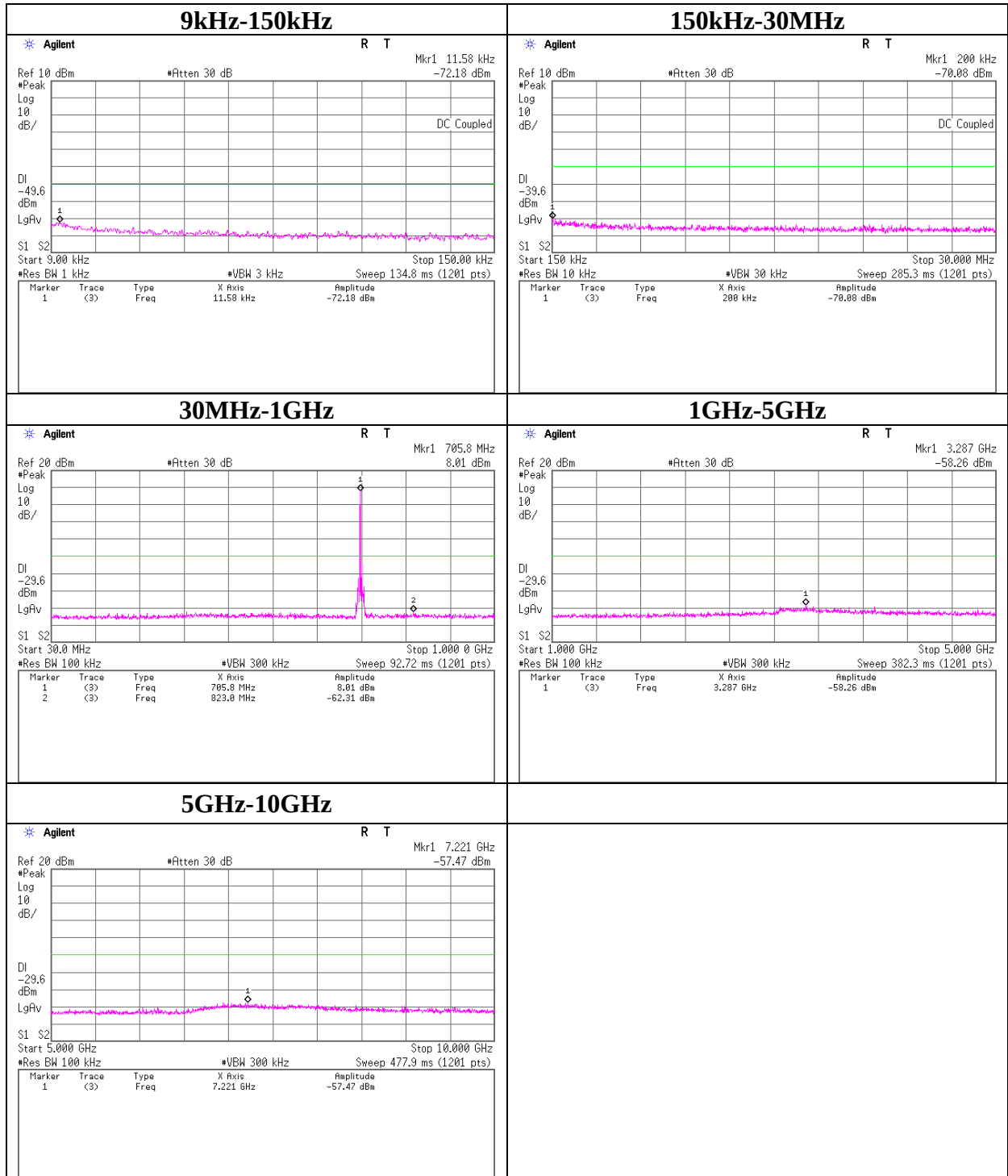
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

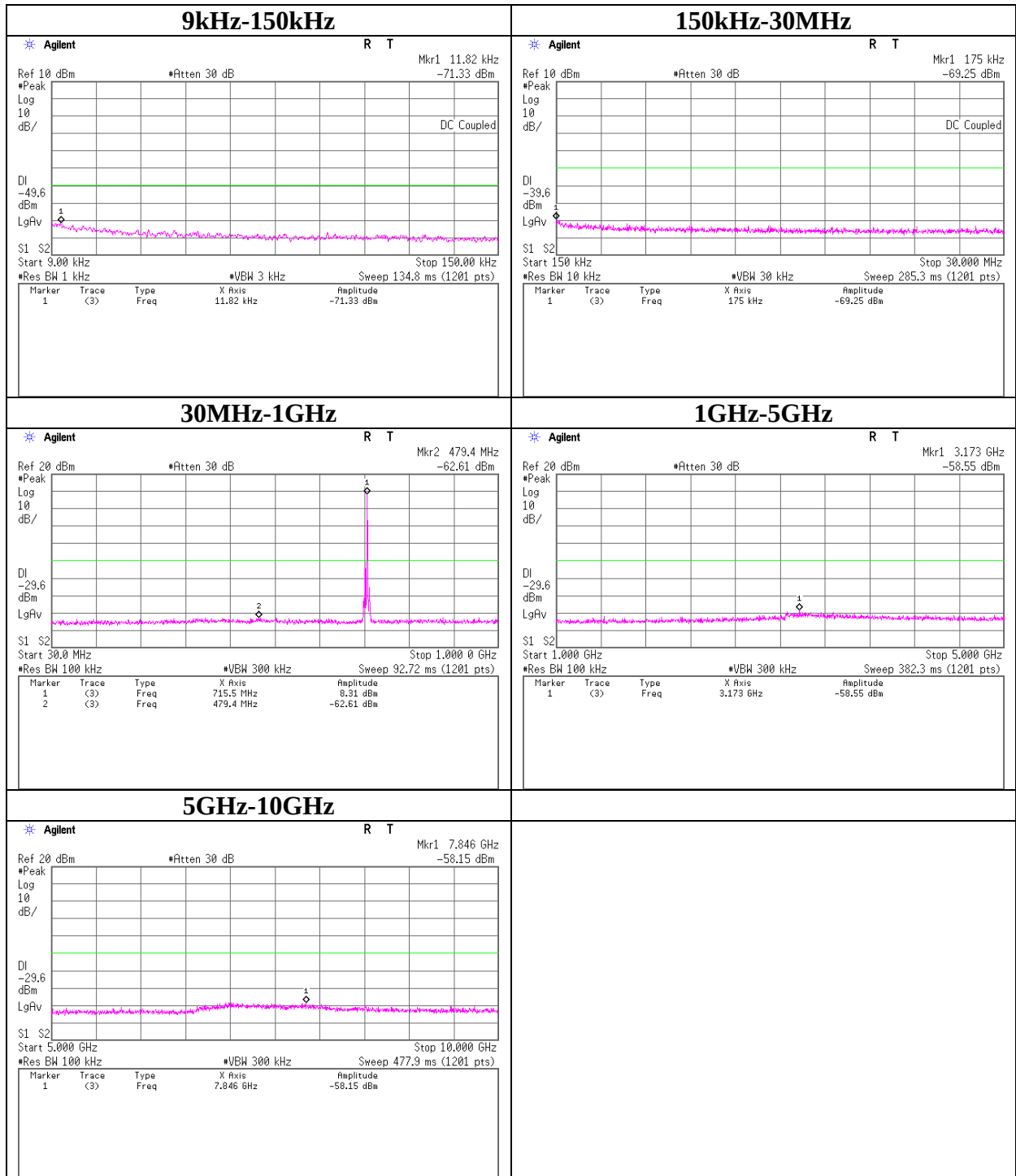
Spurious Emission (Conducted)
LTE Band XVII
Tx: 709.0MHz



Spurious Emission (Conducted)
LTE Band XVII
Tx:710.0MHz



Spurious Emission (Conducted)
LTE Band XVII
Tx:711.0MHz



Spurious Emission (Radiated) W-CDMA Band IV

Report No. 10636726H
Test place Ise EMC Lab. No.2 and No.4 Semi Anechoic Chamber
Date 01/23/2015 01/26/2015
Temperature / Humidity 22deg. C / 24 % RH 21deg. C / 32 % RH
Engineer Tomoki Matsui Keisuke Kawamura
(1-10GHz) (Below 1GHz & Above 10GHz)
Mode Tx W-CDMA (RMC 12.2kbps), All Up Bits

Tx: 1712.4MHz

Frequency	Rx SA/TR		Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks
	Reading [dBuV]		Reading [dBm]		Cable Loss [dB]	Ant. Gain [dBi]	Atten. Loss [dB]	(EIRP) [dBm]		(EIRP) [dBm]	[dB]	Rx Ant. Height [cm]	Turn Table [deg]	Rx Ant. Height [cm]	Turn Table [deg]		
	HOR	VER	HOR	VER				HOR	VER							HOR	
3424.80	64.1	65.7	-43.9	-41.1	4.9	12.9	0.0	-35.9	-33.1	-13.0	22.9	20.1	100	300	108	318	
5137.20	56.8	56.3	-44.1	-47.1	6.1	13.1	0.0	-37.1	-40.1	-13.0	24.1	27.1	124	337	100	218	
6849.60	56.4	54.2	-39.5	-43.2	7.1	12.2	0.0	-34.4	-38.1	-13.0	21.4	25.1	117	332	100	59	
10274.40	47.2	49.2	-51.4	-48.6	8.8	11.5	0.0	-48.7	-45.9	-13.0	35.7	32.9	100	191	100	176	
11986.80	46.2	46.2	-50.2	-53.3	9.6	12.2	0.0	-47.7	-50.8	-13.0	34.7	37.8	100	203	107	168	
13699.20	47.3	50.2	-47.2	-43.2	10.4	12.2	0.0	-45.4	-41.4	-13.0	32.4	28.4	100	0	107	184	
15411.60	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-	
17124.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-	

Tx: 1732.6MHz

Frequency	Rx SA/TR		Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks
	Reading [dBuV]		Reading [dBm]		Cable Loss	Ant. Gain	Atten. Loss	(EIRP) [dBm]		(EIRP) [dBm]	[dB]		Rx Ant. Height	Turn Table	Rx Ant. Height	Turn Table	
	[MHz]	HOR	VER	HOR	VER	[dB]	[dBi]	[dB]	HOR	VER		HOR	VER	[cm]	[deg]	[cm]	
3465.20	66.9	68.0	-40.2	-38.5	5.0	13.0	0.0	-32.1	-30.4	-13.0	19.1	17.4	100	299	108	318	
5197.80	57.7	56.7	-42.7	-46.1	6.1	13.2	0.0	-35.7	-39.1	-13.0	22.7	26.1	118	309	114	209	
6930.40	56.6	54.5	-39.8	-44.2	7.1	12.1	0.0	-34.8	-39.2	-13.0	21.8	26.2	107	317	156	29	
10395.60	49.0	49.3	-49.6	-48.5	8.9	11.5	0.0	-47.0	-45.9	-13.0	34.0	32.9	100	186	100	177	
12128.20	48.0	45.3	-48.4	-54.2	9.7	12.4	0.0	-45.7	-51.5	-13.0	32.7	38.5	100	214	109	161	
13860.80	52.9	53.5	-41.6	-39.9	10.5	11.9	0.0	-40.2	-38.5	-13.0	27.2	25.5	100	0	106	184	
15593.40	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-	-
17326.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-	-

Tx: 1752.6MHz

Frequency	Rx SA/TR		Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks
	Reading [dBuV]		Reading [dBm]		Cable Loss [dB]	Ant. Gain [dBi]	Atten. Loss [dB]	(EIRP) [dBm]		(EIRP) [dBm]	[dB]		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]	
	HOR	VER	HOR	VER				HOR	VER								
3505.20	60.5	62.1	-47.3	-44.4	5.0	13.1	0.0	-39.2	-36.3	-13.0	26.2	23.3	120	121	108	318	
5257.80	63.4	60.3	-37.8	-40.9	6.2	13.2	0.0	-30.8	-33.9	-13.0	17.8	20.9	100	338	100	41	
7010.40	55.6	53.7	-41.0	-42.4	7.2	12.0	0.0	-36.2	-37.6	-13.0	23.2	24.6	109	316	178	31	
10515.60	49.4	50.3	-49.2	-47.5	9.0	11.5	0.0	-46.7	-45.0	-13.0	33.7	32.0	100	183	100	170	
12268.20	49.0	48.2	-47.4	-51.3	9.7	12.5	0.0	-44.6	-48.5	-13.0	31.6	35.5	100	212	119	187	
14020.80	51.8	53.4	-42.7	-40.0	10.6	11.7	0.0	-41.6	-38.9	-13.0	28.6	25.9	100	7	106	180	
15773.40	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-	
17526.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-	

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss
Rx-ANTENNA : Biconical Antenna(30M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)
Tx-ANTENNA : 120MHz tuned Dipole Antenna(30M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)
Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
NS : No signal detect.
Detector : S/A PK(RBW:1MHz/VBW:3MHz)

Spurious Emission (Radiated) LTE Band IV

Report No. 10636726H
Test place Ise EMC Lab. No.2 Semi Anechoic Chamber
Date 01/27/2015 01/28/2015
Temperature / Humidity 22deg. C / 35% RH 21deg. C / 31% RH
Engineer Tsubasa Takayama Tsubasa Takayama
(Above 1GHz) (Below 1GHz)
Mode Tx LTE 3MHz BW QPSK RB1

Tx: 1711.5MHz, RB1-14

Frequency	Rx SA/TR		Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks
	Reading [dBuV]		Reading [dBm]		Cable Loss [dB]	Ant. Gain [dBi]	Atten. Loss [dB]	(EIRP) [dBm]		(EIRP) [dBm]	[dB]		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]	
	HOR	VER	HOR	VER				HOR	VER								
3423.00	72.3	68.3	-35.1	-39.1	4.9	11.8	0.0	-28.2	-32.2	-13.0	15.2	19.2	100	78	100	187	
5134.50	56.8	58.2	-44.2	-43.1	6.1	12.4	0.0	-38.0	-36.9	-13.0	25.0	23.9	102	45	100	21	
6846.00	68.9	67.6	-26.0	-29.9	7.1	11.7	0.0	-21.4	-25.3	-13.0	8.4	12.3	100	135	103	41	
8557.50	51.2	57.5	-41.0	-36.4	8.0	11.9	0.0	-37.2	-32.6	-13.0	24.2	19.6	104	51	109	35	
10269.00	44.5	48.2	-52.5	-52.1	8.8	11.1	0.0	-50.2	-49.8	-13.0	37.2	36.8	100	89	100	218	
11980.50	44.3	46.7	-50.0	-51.7	9.6	12.1	0.0	-47.5	-49.2	-13.0	34.5	36.2	100	82	100	221	
13692.00	47.4	49.2	-46.9	-45.6	10.4	12.1	0.0	-45.2	-43.9	-13.0	32.2	30.9	100	98	100	213	
15403.50	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-	
17115.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-	

Tx: 1732.5MHz, RB1-14

Frequency	Rx SA/TR		Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks
	Reading [dBuV]		Reading [dBm]		Cable Loss [dB]	Ant. Gain [dBi]	Atten. Loss [dB]	(EIRP) [dBm]		(EIRP) [dBm]	[dB]		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]	
	[MHz]	HOR	VER	HOR	VER				HOR	VER		HOR	VER				
3465.00	72.7	68.3	-34.5	-39.5	5.0	11.9	0.0	-27.6	-32.6	-13.0	14.6	19.6	102	81	109	188	
5197.50	57.8	58.5	-43.3	-42.8	6.1	12.4	0.0	-37.1	-36.6	-13.0	24.1	23.6	102	51	104	23	
6930.00	66.5	65.1	-28.6	-31.5	7.1	11.7	0.0	-24.0	-26.9	-13.0	11.0	13.9	100	133	103	45	
8662.50	50.2	53.4	-42.1	-40.8	8.1	12.0	0.0	-38.2	-36.9	-13.0	25.2	23.9	100	56	109	42	
10395.00	46.8	53.7	-50.5	-45.4	8.9	11.0	0.0	-48.4	-43.3	-13.0	35.4	30.3	100	86	100	211	
12127.50	48.2	51.1	-45.7	-45.9	9.7	12.3	0.0	-43.1	-43.3	-13.0	30.1	30.3	100	98	100	217	
13860.00	56.2	58.2	-37.6	-36.1	10.5	11.9	0.0	-36.3	-34.8	-13.0	23.3	21.8	100	102	100	214	
15592.50	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-	
17325.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-	

Tx: 1753.5MHz, RB1-0

Frequency	Rx SA/TR		Tx SG		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Atten. Loss [dB]	Result		Limit (EIRP) [dBm]	Margin		Horizontal		Vertical		Remarks	
	Reading [dBuV]		Reading [dBm]					(EIRP) [dBm]			(EIRP) [dBm]	(dB)		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]		Turn Table [deg.]
	[MHz]	HOR	VER	HOR				VER	HOR			VER	HOR					
3507.00	69.6	67.4	-37.6	-40.2	5.0	11.9	0.0	-30.7	-33.3	-13.0	17.7	20.3	104	89	109	189		
5260.50	61.2	60.8	-47.1	-40.5	6.2	12.4	0.0	-40.9	-34.3	-13.0	27.9	21.3	102	58	103	31		
7014.00	62.3	58.7	-31.9	-38.4	7.2	11.7	0.0	-27.4	-33.9	-13.0	14.4	20.9	106	132	103	48		
8767.50	51.6	51.2	-40.7	-42.2	8.2	12.1	0.0	-36.8	-38.3	-13.0	23.8	25.3	100	51	105	41		
10521.00	52.6	54.3	-44.2	-44.3	9.0	11.0	0.0	-42.2	-42.3	-13.0	29.2	29.3	100	92	100	198		
12274.50	55.3	54.4	-38.2	-41.8	9.7	12.4	0.0	-35.5	-39.1	-13.0	22.5	26.1	100	102	100	211		
14028.00	61.8	62.7	-33.2	-31.2	10.6	11.8	0.0	-32.1	-30.1	-13.0	19.1	17.1	100	92	100	217		
15781.50	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-		
17535.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-		

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss -2.15

Rx-ANTENNA : Biconical Antenna(25M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(25M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)

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

NS : No signal detect.

Detector : Spectrum Analyzer Peak(RBW:1MHz/VBW:3MHz)

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Spurious Emission (Radiated) LTE Band VII

Report No. 10636726H
Test place Ise EMC Lab. No.2 Semi Anechoic Chamber
Date 01/27/2015 01/27/2015 01/28/2015
Temperature / Humidity 22deg. C / 35% RH 22deg. C / 35% RH 21deg. C / 31% RH
Engineer Hironobu Ohnishi Tsubasa Takayama Tsubasa Takayama
(1-10GHz) (10GHz-) (Below1GHz)
Mode Tx LTE 10MHz BW QPSK RB1

Tx: 2505MHz, RB1-49

Frequency	Rx SA/TR		Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks	
	Reading [dBuV]		Reading [dBm]		Cable Loss [dB]	Ant. Gain [dBi]	Atten. Loss [dB]	(EIRP) [dBm]			(EIRP) [dBm]	[dB]		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]		Turn Table [deg.]
	[MHz]	HOR	VER	HOR				VER	HOR			VER						
5010.00	63.6	57.6	-36.3	-44.2	6.1	12.5	0.0	-29.9	-37.8	-25.0	4.8	12.8	109	82	100	277		
7515.00	52.4	52.1	-42.2	-43.2	7.4	12.0	0.0	-37.7	-38.7	-25.0	12.7	13.7	106	357	124	5		
10020.00	51.6	52.7	-46.3	-48.4	8.7	11.3	0.0	-43.7	-45.8	-25.0	18.7	20.8	100	87	100	171		
12525.00	54.3	53.8	-39.4	-42.8	9.8	12.6	0.0	-36.6	-40.0	-25.0	11.6	15.0	100	98	100	189		
15030.00	55.1	56.3	-39.1	-34.5	10.9	13.7	0.0	-36.3	-31.7	-25.0	11.3	6.7	100	102	100	188		
17535.00	54.5	51.1	-37.9	-34.1	12.0	11.0	0.0	-38.9	-35.1	-25.0	13.9	10.1	100	81	100	192		
20040.00	NS	NS	-	-	-	-	-	-	-	-25.0	-	-	-	-	-	-		
22545.00	NS	NS	-	-	-	-	-	-	-	-25.0	-	-	-	-	-	-		
25050.00	NS	NS	-	-	-	-	-	-	-	-25.0	-	-	-	-	-	-		

Tx: 2535MHz, RB1-49

Frequency	Rx SA/TR		Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks	
	Reading [dBuV]		Reading [dBm]		Cable Loss [dB]	Ant. Gain [dBi]	Atten. Loss [dB]	(EIRP) [dBm]			(EIRP) [dBm]	[dB]		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]		Turn Table [deg.]
	[MHz]	HOR	VER	HOR				VER	HOR			VER						
5070.00	63.8	60.2	-35.8	-41.3	6.1	12.6	0.0	-29.3	-34.8	-25.0	4.2	9.7	108	82	116	277		
7605.00	51.0	51.7	-44.7	-44.1	7.5	11.8	0.0	-40.4	-39.8	-25.0	15.4	14.8	103	356	121	5		
10140.00	46.9	46.4	-49.9	-56.3	8.8	11.2	0.0	-47.5	-53.9	-25.0	22.5	28.9	100	72	100	162		
12675.00	51.1	52.3	-41.8	-44.2	9.8	12.7	0.0	-39.0	-41.4	-25.0	14.0	16.4	100	62	100	222		
15210.00	50.5	52.3	-43.0	-38.2	11.0	14.3	0.0	-39.8	-35.0	-25.0	14.8	10.0	100	81	100	181		
17745.00	56.4	48.9	-36.1	-38.9	12.1	9.4	0.0	-38.8	-41.6	-25.0	13.8	16.6	100	89	100	192		
20280.00	NS	NS	-	-	-	-	-	-	-	-25.0	-	-	-	-	-	-		
22815.00	NS	NS	-	-	-	-	-	-	-	-25.0	-	-	-	-	-	-		
25350.00	NS	NS	-	-	-	-	-	-	-	-25.0	-	-	-	-	-	-		

Tx: 2565MHz, RB1-49

Frequency	Rx SA/TR		Tx SG		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. Loss [dB]	Result		Limit (EIRP) [dBm]	Margin		Horizontal		Vertical		Remarks
	Reading [dBuV]		Reading [dBm]					(EIRP) [dBm]			(EIRP) [dBm]	Turn Table [deg.]	Turn Table [deg.]	Rx Ant. Height [cm]	Turn Table [deg.]		
	HOR	VER	HOR	VER				HOR	VER								
[MHz]	HOR	VER	HOR	VER				HOR	VER		HOR	VER					
5130.00	64.5	66.1	-35.7	-35.4	6.1	12.8	0.0	-29.1	-28.8	-25.0	4.1	3.8	108	82	126	224	
7695.00	52.0	52.0	-43.0	-42.8	7.6	11.7	0.0	-38.9	-38.7	-25.0	13.9	13.7	113	358	128	10	
10260.00	47.7	48.7	-50.5	-50.7	8.8	11.1	0.0	-48.2	-48.4	-25.0	23.2	23.4	100	91	100	172	
12825.00	48.9	51.1	-42.9	-43.1	9.9	12.8	0.0	-40.0	-40.2	-25.0	15.0	15.2	100	68	100	211	
15390.00	46.8	48.9	-44.2	-42.3	11.1	14.8	0.0	-40.5	-38.6	-25.0	15.5	13.6	100	82	100	172	
17955.00	52.7	48.3	-38.2	-40.3	12.2	7.9	0.0	-42.6	-44.7	-25.0	17.6	19.7	100	102	100	0	
20520.00	45.5	47.6	-46.0	-43.3	13.0	15.9	0.0	-43.1	-40.4	-25.0	18.1	15.4	100	81	100	221	
23085.00	NS	NS	-	-	-	-	-	-	-	-25.0	-	-	-	-	-	-	
25650.00	NS	NS	-	-	-	-	-	-	-	-25.0	-	-	-	-	-	-	

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss
Rx-ANTENNA : Biconical Antenna(25M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)
Tx-ANTENNA : 120MHz tuned Dipole Antenna(25M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)
Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
NS : No signal detect.
Detector : Spectrum Analyzer Peak(RBW:1MHz/VBW:3MHz)
Spectrum Analyzer RMS Average (RBW:1MHz/VBW:3MHz) (2nd harmonics)

Spurious Emission (Radiated) LTE Band XVII

Report No. 10636726H
Test place Ise EMC Lab. No.2 Semi Anechoic Chamber
Date 01/27/2015 01/28/2015
Temperature / Humidity 22deg. C / 35% RH 21deg. C / 31% RH
Engineer Tsubasa Takayama Tsubasa Takayama
(Above 1GHz) (Below 1GHz)
Mode Tx LTE 10MHz BW QPSK RB1

Tx: 709MHz, RB1-49

Frequency	Rx SA/TR		Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks	
	Reading [dBuV]		Reading [dBm]		Cable Loss [dB]	Ant. Gain [dBi]	Atten. Loss [dB]	(ERP) [dBm]			(ERP) [dBm]	[dB]		Rx Ant. Height [cm]	Turn Table [deg]	Rx Ant. Height [cm]		Turn Table [deg]
	[MHz]	HOR	VER	HOR				VER	HOR			VER						
1418.00	48.2	49.8	-62.1	-60.8	3.1	7.5	0.0	-59.9	-58.6	-13.0	46.9	45.6	102	81	102	188		
2127.00	65.0	57.8	-43.3	-50.3	3.8	10.4	0.0	-38.9	-45.9	-13.0	25.9	32.9	102	61	110	231		
2836.00	49.8	45.3	-56.1	-59.9	4.4	10.9	0.0	-51.8	-55.6	-13.0	38.8	42.6	112	67	103	221		
3545.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-		
3545.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-		
4254.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-		
5672.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-		
6381.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-		
7090.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-		

Tx: 710MHz, RB1-0

Frequency	Rx SA/TR			Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks	
	Reading [dBuV]			Reading [dBm]		Cable Loss [dB]	Ant. Gain [dBi]	Atten. Loss [dB]	(ERP) [dBm]			(ERP) [dBm]	[dB]		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]		Turn Table [deg.]
	[MHz]	HOR	VER	HOR	VER				HOR	VER									
1420.00	48.5	49.8	-61.8	-60.9	3.1	7.5	0.0	-59.6	-58.7	-13.0	46.6	45.7	108	89	102	182			
2130.00	65.8	58.9	-42.5	-49.4	3.8	10.4	0.0	-38.1	-45.0	-13.0	25.1	32.0	103	51	114	233			
2840.00	49.2	45.9	-56.7	-59.3	4.4	10.9	0.0	-52.4	-55.0	-13.0	39.4	42.0	111	76	103	228			
3550.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-	-		
4260.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-	-		
4970.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-	-		
5680.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-	-		
6390.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-	-		
7100.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-	-		

Tx: 711MHz, RB1-49

Frequency	Rx SA/TR		Tx SG		Tx	Tx	Tx Ant.	Result		Limit	Margin		Horizontal		Vertical		Remarks	
	Reading [dBuV]		Reading [dBm]		Cable Loss [dB]	Ant. Gain [dBi]	Atten. Loss [dB]	(ERP) [dBm]			(ERP) [dBm]	[dB]		Rx Ant. Height [cm]	Turn Table [deg.]	Rx Ant. Height [cm]		Turn Table [deg.]
	[MHz]	HOR	VER	HOR				VER	HOR			VER						
1422.00	48.9	49.8	-61.4	-60.9	3.1	7.5	0.0	-59.2	-58.7	-13.0	46.2	45.7	109	91	102	188		
2133.00	64.7	58.9	-41.7	-49.3	3.8	10.4	0.0	-37.3	-44.9	-13.0	24.3	31.9	102	48	111	281		
2844.00	48.5	45.9	-57.4	-59.2	4.5	10.9	0.0	-53.1	-54.9	-13.0	40.1	41.9	112	81	114	221		
3555.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-		
4266.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-		
4977.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-		
5688.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-		
6399.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-		
7110.00	NS	NS	-	-	-	-	-	-	-	-13.0	-	-	-	-	-	-		

Calculation Result = SG Reading - Tx Cable Loss + Tx Antenna Gain - Tx Antenna Attenuator Loss -2.15

Rx-ANTENNA : Biconical Antenna(25M-300MHz), Logperiodic Antenna(300M-1000MHz), Horn Antenna(1G-40GHz)

Tx-ANTENNA : 120MHz tuned Dipole Antenna(25M-120MHz), Dipole Antenna(120M-1000MHz), Horn Antenna(1G-40GHz)

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

NS : No signal detect.

Detector : Spectrum Analyzer Peak(RBW:1MHz/VBW:3MHz)

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Frequency Stability(Temperature/Voltage Variation)
W-CDMA Band IV / Tx: 1732.6MHz

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 02/09/2015
Temperature/ Humidity : 19 deg. C / 51% RH
Engineer : Yutaka Yoshida
Mode : Tx W-CDMA(RMC12.2kbps), All Up Bits

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
-30	3.80	1732.5999976	0.0	0.0000	2.5
-20	3.80	1732.5999962	-1.3	-0.0008	2.5
-10	3.80	1732.5999975	-0.1	-0.0001	2.5
0	3.80	1732.5999971	-0.5	-0.0003	2.5
10	3.80	1732.5999960	-1.6	-0.0009	2.5
20	3.80	1732.5999976	0.0	0.0000	Reference
30	3.80	1732.5999993	1.8	0.0010	2.5
40	3.80	1732.5999984	0.9	0.0005	2.5
50	3.80	1732.5999973	-0.2	-0.0001	2.5

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
20	4.20	1732.5999968	-0.8	-0.0005	2.5
20	3.80	1732.5999976	0.0	0.0000	Reference
20	3.00	1732.5999977	0.1	0.0001	2.5

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4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Frequency Stability(Temperature/Voltage Variation)
LTE Band IV / Tx: 1732.5MHz

Test place Ise EMC Lab. No.6 Measurement Room
Report No. 10636726H
Date 02/09/2015
Temperature/ Humidity 19 deg. C / 51% RH
Engineer Yutaka Yoshida
Mode Tx LTE(QPSK), BW 20MHz

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
-30	3.80	1732.5000011	1.2	0.0007	2.5
-20	3.80	1732.5000012	1.3	0.0007	2.5
-10	3.80	1732.5000012	1.3	0.0008	2.5
0	3.80	1732.5000015	1.6	0.0009	2.5
10	3.80	1732.5000006	0.7	0.0004	2.5
20	3.80	1732.4999999	0.0	0.0000	Reference
30	3.80	1732.5000006	0.7	0.0004	2.5
40	3.80	1732.5000004	0.5	0.0003	2.5
50	3.80	1732.4999996	-0.3	-0.0002	2.5

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
20	4.20	1732.5000001	0.2	0.0001	2.5
20	3.80	1732.4999999	0.0	0.0000	Reference
20	3.00	1732.5000009	1.0	0.0006	2.5

Frequency Stability(Temperature/Voltage Variation)
LTE Band IV / Tx: 1732.5MHz

Test place Ise EMC Lab. No.6 Measurement Room
Report No. 10636726H
Date 02/09/2015
Temperature/ Humidity 19 deg. C / 51% RH
Engineer Yutaka Yoshida
Mode Tx LTE(16QAM), BW 20MHz

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
-30	3.80	1732.5000015	1.2	0.0007	2.5
-20	3.80	1732.5000012	1.0	0.0006	2.5
-10	3.80	1732.5000025	2.2	0.0013	2.5
0	3.80	1732.5000030	2.7	0.0016	2.5
10	3.80	1732.5000010	0.8	0.0005	2.5
20	3.80	1732.5000002	0.0	0.0000	Reference
30	3.80	1732.5000017	1.5	0.0009	2.5
40	3.80	1732.5000006	0.3	0.0002	2.5
50	3.80	1732.5000010	0.7	0.0004	2.5

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
20	4.20	1732.5000005	0.3	0.0002	2.5
20	3.80	1732.5000002	0.0	0.0000	Reference
20	3.00	1732.5000017	1.5	0.0009	2.5

Frequency Stability(Temperature/Voltage Variation)
LTE Band VII / Tx: 2535.0MHz

Test place Ise EMC Lab. No.6 Measurement Room
Report No. 10636726H
Date 02/09/2015
Temperature/ Humidity 19 deg. C / 51% RH
Engineer Yutaka Yoshida
Mode Tx LTE(QPSK), BW 20MHz

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
-30	3.70	2535.0000003	0.7	0.0003	2.5
-20	3.70	2535.0000019	2.3	0.0009	2.5
-10	3.70	2534.9999998	0.2	0.0001	2.5
0	3.70	2535.0000005	0.9	0.0003	2.5
10	3.70	2535.0000033	3.7	0.0015	2.5
20	3.70	2534.9999996	0.0	0.0000	Reference
30	3.70	2535.0000010	1.4	0.0006	2.5
40	3.70	2535.0000022	2.6	0.0010	2.5
50	3.70	2535.0000040	4.4	0.0017	2.5

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
20	4.20	2534.9999989	-0.7	-0.0003	2.5
20	3.70	2534.9999996	0.0	0.0000	Reference
20	3.60	2535.0000029	3.3	0.0013	2.5

Frequency Stability(Temperature/Voltage Variation)
LTE Band VII / Tx: 2535.0MHz

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 02/09/2015
Temperature/ Humidity : 19 deg. C / 51% RH
Engineer : Yutaka Yoshida
Mode : Tx LTE(16QAM), BW 20MHz

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
-30	3.70	2535.0000015	0.4	0.0001	2.5
-20	3.70	2535.0000015	0.4	0.0001	2.5
-10	3.70	2535.0000053	4.1	0.0016	2.5
0	3.70	2534.9999993	-1.9	-0.0007	2.5
10	3.70	2535.0000007	-0.5	-0.0002	2.5
20	3.70	2535.0000012	0.0	0.0000	Reference
30	3.70	2535.0000002	-1.0	-0.0004	2.5
40	3.70	2535.0000058	4.7	0.0018	2.5
50	3.70	2535.0000047	3.5	0.0014	2.5

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
20	4.20	2535.0000003	-0.9	-0.0004	2.5
20	3.70	2535.0000012	0.0	0.0000	Reference
20	3.60	2535.0000008	-0.3	-0.0001	2.5

Frequency Stability(Temperature/Voltage Variation)
LTE Band XVII / Tx: 710.0MHz

Test place Ise EMC Lab. No.6 Measurement Room
Report No. 10636726H
Date 02/09/2015
Temperature/ Humidity 19 deg. C / 51% RH
Engineer Yutaka Yoshida
Mode Tx LTE(QPSK), BW 10MHz

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
-30	3.80	710.0000009	1.1	0.0016	2.5
-20	3.80	710.0000009	1.2	0.0016	2.5
-10	3.80	710.0000005	0.7	0.0010	2.5
0	3.80	710.0000003	0.5	0.0007	2.5
10	3.80	710.0000011	1.3	0.0018	2.5
20	3.80	709.9999998	0.0	0.0000	Reference
30	3.80	709.9999996	-0.2	-0.0002	2.5
40	3.80	709.9999996	-0.1	-0.0002	2.5
50	3.80	709.9999993	-0.5	-0.0006	2.5

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
20	4.20	709.9999990	-0.8	-0.0011	2.5
20	3.80	709.9999998	0.0	0.0000	Reference
20	3.00	709.9999990	-0.7	-0.0010	2.5

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Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Frequency Stability(Temperature/Voltage Variation)
LTE Band XVII / Tx: 710.0MHz

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10636726H
Date : 02/09/2015
Temperature/ Humidity : 19 deg. C / 51% RH
Engineer : Yutaka Yoshida
Mode : Tx LTE(16QAM), BW 10MHz

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
-30	3.80	710.0000010	1.0	0.0014	2.5
-20	3.80	710.0000021	2.1	0.0030	2.5
-10	3.80	710.0000000	0.0	0.0000	2.5
0	3.80	710.0000015	1.5	0.0021	2.5
10	3.80	710.0000009	0.9	0.0013	2.5
20	3.80	710.0000000	0.0	0.0000	Reference
30	3.80	709.9999989	-1.1	-0.0016	2.5
40	3.80	709.9999987	-1.3	-0.0019	2.5
50	3.80	709.9999992	-0.8	-0.0011	2.5

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
20	4.20	710.0000004	0.4	0.0006	2.5
20	3.80	710.0000000	0.0	0.0000	Reference
20	3.00	710.0000000	0.0	0.0000	2.5

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APPENDIX 2: Test instruments

EMI test equipment (1/2)

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-02	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	RE	2014/06/25 * 12
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	RE	2015/01/13 * 12
MJM-14	Measure	KOMELON	KMC-36	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MRENT-116	Spectrum Analyzer	Agilent	E4440A	MY46187620	RE	2014/03/05 * 12
MHA-06	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	254	RE	2014/02/21 * 12
MCC-166	Microwave Cable	Junkosha	MWX221	1303S120(1m) / 1311S167(5m)	RE	2014/09/24 * 12
MPA-10	Pre Amplifier	Agilent	8449B	3008A02142	RE	2015/01/28 * 12
MRF-10	Band Rejection Filter(1710-1755MHz)	TOKYO KEIKI	TF81ZRD1	1001	RE	2015/01/26 * 12
MCC-79	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	278923/4	RE	2014/12/15 * 12
MHF-06	High Pass Filter 3.5-24GHz	TOKIMEC	TF323DCA	601	RE	2014/05/21 * 12
MHA-05	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	253	RE	2014/05/16 * 12
KSG-05	Signal Generator	Rohde & Schwarz	SMR40	100137	RE	2014/07/23 * 12
MCC-130	Microwave Cable(1-30GHz)	HUBER+SUHNER	SF103/11PC3.5-31/11PC3.5-31/8.0m	54308/3	RE	2015/01/07 * 12
MAEC-04	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2014/02/28 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	1501	RE	2015/01/13 * 12
MJM-23	Measure	ASKUL	-	-	RE	-
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	RE	2014/04/08 * 12
MHA-21	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	9120D-557	RE	2014/08/12 * 12
MCC-141	Microwave Cable	Junkosha	MWX221	1305S002R(1m) / 1405S146(5m)	RE	2014/06/11 * 12
MPA-12	MicroWave System Amplifier	Agilent	83017A	MY39500780	RE	2014/03/11 * 12
MBA-05	Biconical Antenna	Schwarzbeck	BBA9106	1302	RE	2014/11/22 * 12
MLA-08	Logperiodic Antenna	Schwarzbeck	UKLP9140-A	N/A	RE	2014/11/22 * 12
MCC-50	Coaxial Cable	UL Japan	-	-	RE	2014/06/02 * 12
MAT-68	Attenuator	Anritsu	MP721B	6200961025	RE	2014/11/11 * 12
MPA-14	Pre Amplifier	SONOMA INSTRUMENT	310	260833	RE	2014/03/14 * 12
MHF-26	High Pass Filter 3.5-18.0GHz	UL Japan	HPF SELECTOR	002	RE	2014/09/24 * 12
SURC-01	Radio Communication Analyzer	Anritsu	MT8820C	6201274351	RE	2014/05/20 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2014/05/26 * 12
MRF-11	Band Rejection Filter(2500-2570MHz)	TOKYO KEIKI	TF81ZRD1	1001	RE	2015/01/27 * 12
MCC-91	Microwave Cable 1G-40GHz	Suhner	SUCOFLEX102	30812/2	RE	2014/05/16 * 12
MHA-02	Horn Antenna 18-26.5GHz	EMCO	3160-09	1265	RE(MW)	2014/02/21 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	201	RE	2014/10/18 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	-	RE	2014/02/20 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	BK7970	RE	2014/11/11 * 12
YTSSG03	Signal Generator	Rohde & Schwarz	SMT02	51400043	RE	2014/08/18 * 12
MCC-125	Coaxial Cable	UL Japan	-	-	RE	2014/07/15 * 12
MDA-03	Dipole Antenna	Schwarzbeck	UHAP	991	RE	2014/10/06 * 12

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

EMI test equipment (2/2)

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MURC-05	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	127576	AT	2014/11/25 * 12
MPM-08	Power Meter	Anritsu	ML2495A	6K00003338	AT	2014/10/16 * 12
MPSE-11	Power sensor	Anritsu	MA2411B	011737	AT	2014/10/15 * 12
MPD-03	Power Divider DC-12.4GHz	SUHNER	4901.19.A	-	AT	2014/05/14 * 12
MCC-93	Microwave Cable 1G-40GHz	Suhner	SUCOFLEX102	30814/2	AT	2014/05/14 * 12
MOS-14	Thermo-Hygrometer	Custom	CTH-201	1401	AT	2015/01/13 * 12
MAT-25	Attenuator(10dB)(above 1GHz)	Agilent	8493C	71642	AT	2014/06/12 * 12
MCC-144	Microwave Cable	Junkosha	MWX221	1207S407	AT	2014/08/08 * 12
MSA-16	Spectrum Analyzer	Agilent	E4440A	MY46186390	AT	2014/02/28 * 12
MPM-16	Power Meter	Agilent	8990B	MY51000271	AT	2014/04/04 * 12
MPSE-22	Power sensor	Agilent	N1923A	MY54070003	AT	2014/04/04 * 12
MCH-04	Temperature and Humidity Chamber	Tabai Espec	PL-2KP	14015723	AT	2014/08/06 * 12

The expiration date of the calibration is the end of the expired month.

All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

Test Item:

RE: Radiated Emission

AT: Antenna terminal conducted test

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Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124