

KES Co., Ltd. 3701, 40, Simin-daero 365beon-gil, n-gu, Anvang-si, Gyeonggi-do, 14057.

3701, 40, Simin-daero 365beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea Tel: +82-31-425-6200 / Fax: +82-31-424-0450 www.kes.co.kr Test report No.: KES-RF-20T0108 Page (1) of (54)

TEST REPORT

Part 15 C & RSS-247 (Issue 2)

 Equipment under test
 Instant Photo Printer

 Model name
 009046

 Derivative name
 009047, 009048, 009049, 009050, P210, PM220, P210R

 FCC ID
 PO5009046

 IC
 26212-009046

 Applicant
 Prinics Co.Ltd

 Manufacturer
 Prinics Co.Ltd

 Date of test(s)
 2020.06.15 ~ 2020.06.19

 Date of issue
 2020.06.25

Issued to

Prinics Co.Ltd

228-92, Saneop-ro 155beon-gil, Gwonseon-gu, Suwon-si, Gyeonggi-do, Korea Tel: +82-31-293-5991 / Fax: +82-31-293-5994

Issued by KES Co., Ltd.

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Revision history

Revision	Date of issue	Test report No.	Description
-	2020.06.25	KES-RF-20T0108	Initial



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Applicant:	Prinics Co.Ltd
Applicant address:	228-92, Saneop-ro 155beon-gil, Gwonseon-gu, Suwon-si, Gyeonggi-do, Korea
Test site:	KES Co., Ltd.
Test site address:	3701, 40, Simin-daero 365beon-gil, Dongan-gu, Anyang-si,
	Gyeonggi-do, 14057, Korea
	473-21, Gayeo-ro, Yeoju-si, Gyeonggi-do, Korea
Test Facility	FCC Accreditation Designation No.: KR0100, Registration No.: 444148
	ISED Registration No.: 4769B
FCC rule part(s):	15.247
IC rule part(s):	RSS-247
FCC ID:	PO5009046
IC Certification	26212-009046
Test device serial No.:	➢ Production □ Pre-production □ Engineering

1. General information

1.1. EUT description

Equipment under test	Instant Photo Printer
Frequency range	2 402 MHz ~ 2 480 MHz (BDR/EDR)
Model	009046
Derivative name	009047, 009048, 009049, 009050, P210, PM220, P210R
Modulation technique	GFSK, π/4DQPSK, 8DPSK
Number of channels	2 402 Młz ~ 2 480 Młz (BDR/EDR) : 79 ch
Antenna specification	Antenna type : PCB antenna, Peak gain : -0.37 dBi
Power source	DC 7.40 V (Rechargeable Li-ion Battery)

15.247(a)(1) that the rx input bandwidths shift frequencies in synchronization with the transmitted signals.

15.247(g): In accordance with the Bluetooth Industry Standard, the system is designed to comply with all of the regulations in Section 15.247 when the transmitter is presented with a continuous data (or information) system.

15.247(h): In accordance with the Bluetooth Industry Standard, the system does not coordinate it channels selection/ hopping sequence with other frequency hopping systems for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters.

Pseudorandom frequency hopping sequence

The channel is represented by a pseudo-random hopping sequence hopping through the 79 RF channels. The hopping sequence is unique for the piconet and is determined by the Bluetooth device address of the master; the phase in the hopping sequence is determined by the Bluetooth clock of the master. The channel is divided into time slots where each slot corresponds to an RF hop frequency. Consecutive hops correspond to different RF hop frequencies. The nominal hop rate is 1 600 hops/s.

Equal hopping frequency use

The channels of this system will be used equally over the long-term distribution of the hopsets.

System receiver input bandwidth

Each channel bandwidth is 1 Mtz.

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

1.2. Test configuration

The Senior Group LLC mFC-BTR-01 FCC ID: PO5009046,

IC: 26212-009046 was tested according to the specification of EUT, the EUT must comply with following standards and KDB documents.

FCC Part 15.247 ISED RSS-247 Issue 2 and RSS-Gen Issue 5 KDB 558074 D01 v05 r02 ANSI C63.10-2013

1.3. Frequency/channel operations

Ch.	Frequency (Mbz)	Rate(Mbps)
00	2 402	1
39	2 441	1
78	2 480	1

1.4. Accessory information

Equipment	Manufacturer	Model	Serial No.	Power source
-	-	-	-	-

1.5. Software and Firmware description

The software and firmware installed in the EUT is 1.0

1.6. Information about derivative model

The circuit diagram and software of the basic model and derivative are fundamentally the same. It is for model management purpose per business partner.



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1.7. Measurement results explanation example

For all conducted test items :

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

 $Offset(dB) = RF \ cable \ loss(dB) + attenuator \ factor(dB).$ = 0.68 + 10 = 10.68

1.8. Measurement Uncertainty

Test Item		Uncertainty	
Uncertainty for Conduction emission test		2.62 dB	
	9kHz - 30MHz	4.54 dB	
Uncertainty for Radiation emission test (include Fundamental emission)	30MHz - 1GHz	4.36 dB	
	Above 1GHz	5.00 dB	
Note. This uncertainty represents an expanded uncertainty expressed at approximately the 95%			
confidence level using a coverage factor of k=2.			

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2. Summar	y of tests		
Section in FCC Part 15	Section in RSS-247 & Gen	Parameter	Test results
-	RSS-Gen 6.7	99% occupied bandwidth	Pass
15.247(a)(1)	RSS-247 5.1(a)	20 dB bandwidth	Pass
15.247(b)(1)	RSS-247 5.4(b)	Output power	Pass
15.247(a)(1)	RSS-247 5.1(b)	Channel separation	Pass
15.247(a)(1)(iii)	RSS-247 5.1(d)	Number of channels	Pass
15.247(a)(1)(iii)	RSS-247 5.1(d)	Time of occupancy	Pass
15.205 15.209	RSS-247 5.5 RSS-Gen 8.9, 8.10	Radiated restricted band and emission	Pass
15.247(d)	RSS-247 5.5	Conducted spurious emission and band edge	Pass



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3. Test results

3.1. 99% Occupied Bandwidth

Test procedure

ANSI C63.10-2013 clause 6.9.2 and 6.9.3

Test setup

EUT	Attenuator	Spectrum
EUI	Attenuator	analyzer

Test setting

- 1. Span = The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- 2. RBW = The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW
- 3. VBW = shall be approximately three times the RBW
- 4. Sweep = auto
- 5. Detector function = Peak
- 6. Trace = Max hold

Limit

Not applicable

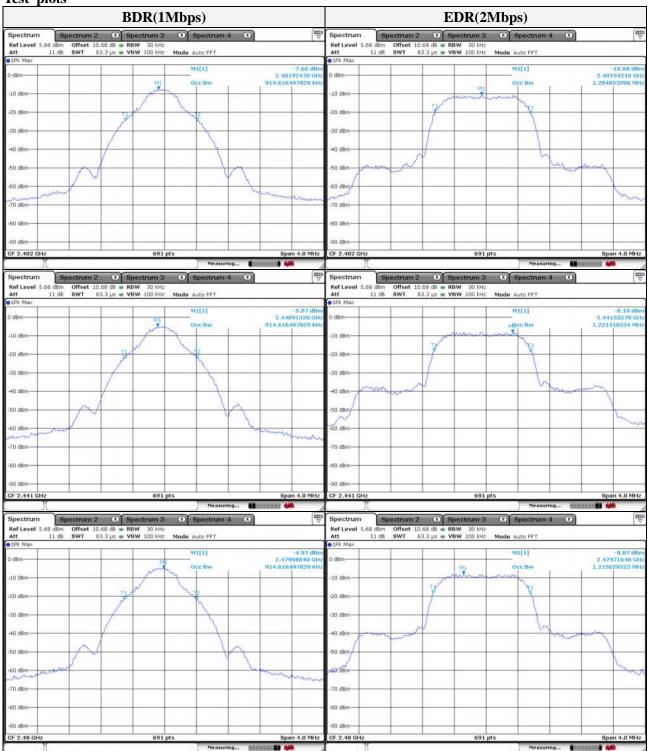
Test results

Frequency(Mz)	Data rate(Mbps)	99% occupied bandwidth(Mz)	Limit(Mz)
2 402		0.915	
2 441	1	0.915	
2 480		0.915	
2 402		1.204	
2 441	2	1.221	-
2 480		1.216	
2 402		1.204	
2 441	3	1.210	
2 480		1.204	



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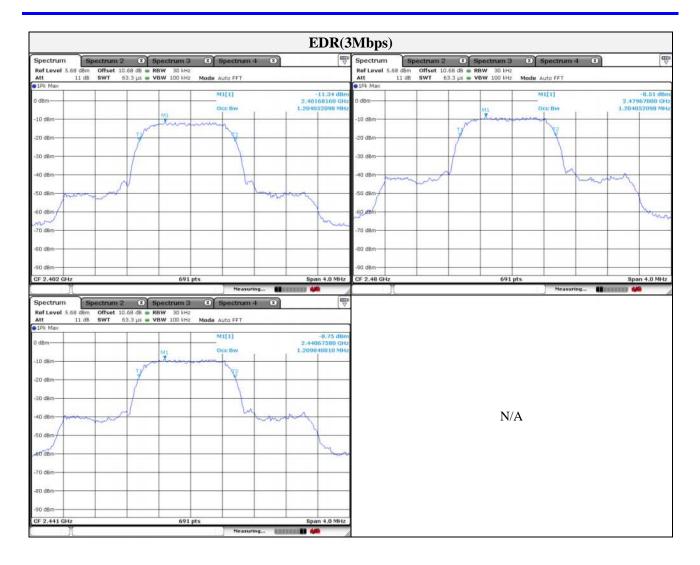




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3.2. 20 dB bandwidth

Test procedure ANSI C63.10-2013 clause 6.9.2 and 6.9.3

Test setup

EUT	Attenuator	Spectrum analyzer
-----	------------	-------------------

Test setting

- 1. Span = The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW.
- 2. RBW = The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW.
- 3. VBW = Shall be approximately three times the RBW.
- 4. Sweep = auto
- 5. Detector function = peak
- 6. Trace mode = max hold

Limit

Not applicable

Test results

Frequency(Mb)	Data rate(Mbps)	20 dB bandwidth(Mb)	Limit(Mz))
2 402		1.030	
2 441	1	1.036	
2 480		1.030	
2 402		1.360	
2 441	2	1.355	-
2 480		1.355	
2 402		1.355	
2 441	3	1.349	
2 480		1.355	



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Test plots





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						ł	DK(3	Mbps)							
Spectrum	Spectrum	2 🗴 5	Spectrum 3	× Spec	ctrum 4	x		Spectrum	Spe	ctrum 2	× :	Spectrum 3	X Spect	rum 4 🛛 🕻	x	
Ref Level 5.68 Att	dBm Offset	10.68 dB 🖷 🛚	BW 30 kHz /BW 100 kHz	Mode Auto	FFT			Ref Level 3				RBW 30 kHz VBW 100 kHz	Mode Auto FF	т		
1Pk Max								• 1Pk Max								
) d8m		5		M1[1]	1	2.40	-10.99 dBm 168160 GHz	0 dBm		-		-	M1[1]		2.4	-8.06 dB
10 dBm			M1	ndB			20.00 dB	-10 dBm				MIL X	ndB			20.00
(2)(2)(2)(2) ⁽¹)		m	Anne	Q take	tor	1.354	500000 MHz 1773.0	12122-922111			r		Q factor	-	1.35	4600000 M 1830
20 dBm		-1					1	-20 dBm			1			(2		-
30 dBm		4			-F			-30 dBm			7			X	_	_
40 d8m			-				-	-40 dBm		- V				M	A	_
5535 1577	100	M			y	- 0		1		m					~	V
50 dBm	- and the second				-	and and a start of the	-	-50 dBm								1
60 dBm			-		-		han	-60 dBm-				+ +				200
70 dBm		_					- mark	-70 dBm								_
9041034237		1														
80 dBm								-80 dBm								
90 dBm								-90 dBm-								
F 2.402 GHz arker			691 pt	ts		Sp	an 4.0 MHz	CF 2.48 GH. Marker				691 pt	s		5	pan 4.0 Mi
T1 T2		2822 GHz 6368 GHz	-30.84 d8m -30.61 d8m		dB		1.3546 MHz 20.00 dB 1773.0	M1 T1 T2	1 1 1	2.4796 2.479270 2.480625	5 GHz	-9.06 dBm -29.29 dBm -27.97 dBm	ndB down ndB Q factor			20.00
12		6368 GHz		Q fact	dB for Measuring	•••••••••••••••••••••••••••••••••••••••	20.00 dB	T1	1	2.479270	5 GHz	-28.29 dBm	nd8 Q factor	casuring	URBANES	20.00 1830.
T2 Spectrum Ref Level 5.68 Mt	1 2.402 Spectrum 3 d8m Offset	2 X S	-30.61 dēm Spectrum 3 BW 30 kHz	Q fact	d8 or Measuring Ctrum 4 (CANANAR 4	20.00 dB 1773.0	T1	1	2.479270	5 GHz	-28.29 dBm	nd8 Q factor			20.00 d 1830.6
T2 Spectrum Raf Level 5.68 Att 1 1Pk Max	1 2.402 Spectrum 3 d8m Offset	2 X S	-30.61 d8m Spectrum 3 BW 30 kHz	Q fact	dB or Measuring Ctrum 4 (CANANAR 4	20.00 dB 1773.0	T1	1	2.479270	5 GHz	-28.29 dBm	nd8 Q factor		GRANNER BO	20.00 d 1830.6
T2 Spectrum Ref Level 5.68 Att 1 IPk Max	1 2.402 Spectrum 3 d8m Offset	2 X S	-30.61 dBm Spectrum 3 BW 30 kHz /BW 100 kHz	Mode Auto	dB or Measuring Ctrum 4 (8	20.00 d8 1773.0 ₩ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	T1	1	2.479270	5 GHz	-28.29 dBm	nd8 Q factor		URBAR NO.	20.00 c 1830.
T2 Spectrum Ref Level 5.68 Att 5 1Pk Max dBm	1 2.402 Spectrum 3 d8m Offset	2 X S	-30.61 d8m Spectrum 3 BW 30 kHz	Mode Auto MI[1]	dB Measuring Ctrum 4 (FFT	2.44	20.00 d8 1773.0	T1	1	2.479270	5 GHz	-28.29 dBm	nd8 Q factor		Constant D	20.00 c 1830.
T2 Spectrum Ref Level 5.68 Att 1 10k Max dBm 10 dBm	1 2.402 Spectrum 3 d8m Offset	2 X S	-30.61 dBm Spectrum 3 BW 30 kHz /BW 100 kHz	Auto Mode Auto M1[1] ndB	dB Measuring Ctrum 4 (FFT	2.44	20.00 dB 1773.0	T1	1	2.479270	5 GHz	-28.29 dBm	nd8 Q factor			20.00 d 1830.6
T2 Spectrum Raf Level 5.68 Att 1 19k Max dBm 10 dBm	1 2.402 Spectrum 3 d8m Offset	2 X S	-30.61 dBm Spectrum 3 BW 30 kHz /BW 100 kHz	Mode Auto MI[1]	dB Measuring Ctrum 4 (FFT	2.44	20.00 d8 1773.0	T1	1	2.479270	5 GHz	-28.29 dBm	nd8 Q factor		Annanan B	20.00 d 1830.6
T2 Image: Constraint of the second seco	1 2.402 Spectrum 3 d8m Offset	2 X S	-30.61 dBm Spectrum 3 BW 30 kHz /BW 100 kHz	Mode Auto MI[1]	de or Heasuring Ctrum 4	2.44	20.00 d8 1773.0	T1	1	2.479270	5 GHz	-28.29 dBm	nd8 Q factor		Canada and C	1.3540 MH 20.00 d 1830.6
T2 Spectrum Ref Level 5.68	1 2.402 Spectrum 3 d8m Offset	2 X S	-30.61 dBm Spectrum 3 BW 30 kHz /BW 100 kHz	Mode Auto MI[1]	de or Heasuring Ctrum 4	2.44	20.00 d8 1773.0	T1	1	2.479270	5 GHz	-28.29 dBm	nd8 Q factor		4aaaaaa B	20.00 d 1830.6
T2 Spectrum Ref Level 5.08 Atternet 1 10k Max dBm 10 dBm 20 dBm 30 dBm 40 dBm	1 2.402 Spectrum 3 d8m Offset	2 X S	-30.61 dBm Spectrum 3 BW 30 kHz /BW 100 kHz	Mode Auto MI[1]	de or Heasuring Ctrum 4	2.44	20.00 d8 1773.0	T1	1	2.479270	5 GHz	-28.29 dBm -27.97 dBm	nd® Q factor			20.00 d 1830.6
T2 II Spectrum Ref Level 5.08 Rat Lavel 5.08 III IPk Max III IBk Max III IBk Max IIII IBk Max IIII IBk Max IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	1 2.402 Spectrum 3 d8m Offset	2 X S	-30.61 dBm Spectrum 3 BW 30 kHz /BW 100 kHz	Mode Auto MI[1]	de or Heasuring Ctrum 4	2.44	20.00 d8 1773.0	T1	1	2.479270	5 GHz	-28.29 dBm	nd® Q factor			20.00 d 1830.6
T2 I Spectrum 6.69 d8m 10 10 d8m 20 20 d8m 30 30 d8m 50	1 2.402 Spectrum 3 d8m Offset	2 X S	-30.61 dBm Spectrum 3 BW 30 kHz /BW 100 kHz	Mode Auto MI[1]	de or Heasuring Ctrum 4	2.44	20.00 d8 1773.0	T1	1	2.479270	5 GHz	-28.29 dBm -27.97 dBm	nd® Q factor			20.00 c 1830.
T2 I Spectrum S.68 Ref Lavel 5.68 S.68 108 III 108 III 108 III 208 III 208 IIII 308 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	1 2.402 Spectrum 3 d8m Offset	2 X S	-30.61 dBm Spectrum 3 BW 30 kHz /BW 100 kHz	Mode Auto MI[1]	de or Heasuring Ctrum 4	2.44	20.00 d8 1773.0	T1	1	2.479270	5 GHz	-28.29 dBm -27.97 dBm	nd® Q factor		ULUES CONTRACTOR	20.00 d 1830.6
T2 II Spectrum III Spectrum III Spectrum III III III III III III IIII III IIII III IIII IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	1 2.402 Spectrum 3 d8m Offset	2 X S	-30.61 dBm Spectrum 3 BW 30 kHz /BW 100 kHz	Mode Auto MI[1]	de or Heasuring Ctrum 4	2.44	20.00 d8 1773.0	T1	1	2.479270	5 GHz	-28.29 dBm -27.97 dBm	nd® Q factor		000000	20.00 d 1830.6
T2 II Spectrum Scelarum Spectrum Scelarum Statut 20 JDr Max 30 JDr Max 30 JDr Max 50 JDr Max 50 <td>1 2.402 Spectrum 3 d8m Offset</td> <td>2 X S</td> <td>-30.61 dBm Spectrum 3 BW 30 kHz /BW 100 kHz</td> <td>Mode Auto MI[1]</td> <td>de or Heasuring Ctrum 4</td> <td>2.44</td> <td>20.00 d8 1773.0</td> <td>T1</td> <td>1</td> <td>2.479270</td> <td>5 GHz</td> <td>-28.29 dBm -27.97 dBm</td> <td>nd® Q factor</td> <td></td> <td>000000</td> <td>20.00 c 1830.</td>	1 2.402 Spectrum 3 d8m Offset	2 X S	-30.61 dBm Spectrum 3 BW 30 kHz /BW 100 kHz	Mode Auto MI[1]	de or Heasuring Ctrum 4	2.44	20.00 d8 1773.0	T1	1	2.479270	5 GHz	-28.29 dBm -27.97 dBm	nd® Q factor		000000	20.00 c 1830.
T2 I Spectrum I Spectrum I Spectrum I JPk Max I JPk Max I JO dBm I S0 dBm I	1 2.402 Spectrum 3 d8m Offset	2 X S	-30.61 dBm Spectrum 3 BW 30 kHz /BW 100 kHz	Mode Auto Mila Mila Q fact	de or Heasuring Ctrum 4	2.44	20.00 d8 1773.0	T1	1	2.479270	5 GHz	-28.29 dBm -27.97 dBm	nd® Q factor		University of the second se	20.00 d 1830.6
T2 II Spectrum Sectrum Stretture 10 IPk Max 10 10 dBm 10 20 dBm 10 30 dBm 10 50 dBm 10 90 dBm 10 91 dBm 10 92 dBm 10 90 dBm 10 91 dBm 10 92 dBm 10 94 dBm 10 95 dBm 10 96 dBm 10 97 dBm 10 90 dBm 10 91 dBm 10 92 dBm 10 94 dBm 10 95 dBm 10 96 dBm 10 96 dBm 10 96 dBm 10 96 dBm 10	1 2.402 Spectrum d dem Offset 15 d8 SWT	2 (2) S 10.68 dB = R 63.3 µs • V	-30.61 dBm	Made Auto Made Auto Mala Q fact	AB dB or Antonio and A data and A	2.44 1.340	20.00 d8 1772.0 -7.04 dBm 060150 GHz 20.00 dB 00000 HHz 1009.6	T1	1	2.479270	5 GHz	-28.29 dBm -27.97 dBm	nd® Q factor			20.00 c 1830.
T2 Image: Constraint of the second seco	1 2.402 Spectrum d @m Offset 15 d8 SWT	2 (2) S 10.68 dB = R 63.3 µs • V	-30.61 dBm	Made Auto Made Auto Mala	Measuring Ctrum 4 (FFT I I I I I I I I I I I I I I I I I I	2.44 1.340 	20.00 d8 1772.0 -7.04 dBm 060150 GHz 20.00 dB 00000 HHz 1009.6	T1	1	2.479270	5 GHz	-28.29 dBm -27.97 dBm	nd® Q factor			20.00 d 1830.6
T2 I Spectrum Text Lavel 5.66 Att I JPk Max I dBm I 10 Bkm I 20 dBm I 30 dBm I 50 dBm I 50 dBm I 50 dBm I 90 dBm I 90 dBm I IF 2.441 GHz I orker I	1 2.402 Spectrum GBm Offset SWT rc Stim 1 2.402 rc 402	2 3) S = 2 3 3 μs = V 10.68 dB = R 63.3 μs = V 1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	-30.61 dBm	mode Auto	Measuring Measuring Ctrum 4 FFT I Measuring Key Constraints	2.44 1.340 	20.00 dB 1773.0	T1	1	2.479270	5 GHz	-28.29 dBm -27.97 dBm	nd® Q factor			20.00 d 1830.6

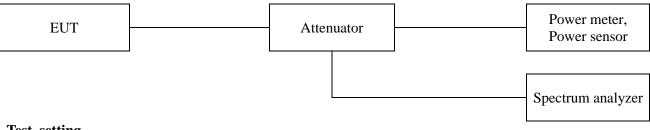


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3.3. Output power Test procedure ANSI C63.10-2013 - Section 7.8.5

Test setup



Test setting

- 1. Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
- 2. RBW > the 20 dB bandwidth of the emission being measured
- 3. VBW \geq RBW
- 4. Sweep = Auto
- 5. Detector function = Peak
- 6. Trace = Max hold

Allow trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emiss ion. The indicated level is the peak output power, after any corrections for external attenuators and cables. A plot of the test results and setup description shall be included in the test report.

Limit

According to \$15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

According to \$15.247(b)(1), For frequency hopping systems operating in the 2 400 ~ 2 483.5 Mz employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5 725 ~ 5 805 Mz band: 1 Watt.

According to RSS-247 Issue 2 5.4(b), For FHSs operating in the band 2 400 - 2 483.5 MLz the maximum peak conducted output power shall not exceed 1.0 W if the hopset uses 75 or more hopping channls; the maximum peak conducted output power shall not exceed 0.125 W if the hopset uses less than 75 hopping channls. The e.i.r.p shall not exceed 0.4 W, except as provided in section 5.4(e).



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Test results						
Frequency(Mz)	Data rate(Mbps)	Peak Power (dBm)	Average Power (dBm) Note1	PK E.I.R.P (dBm)	Power Limit (dBm)	E.I.R.P Limit for ISED(dBm)
2 402		-6.14	-6.36	-6.51	20.97	36.02
2 441	1	-3.35	-3.54	-3.72	20.97	36.02
2 480		-3.17	-3.20	-3.54	20.97	36.02
2 402		-3.41	-6.40	-3.78	20.97	36.02
2 441	2	0.19	-3.31	-0.18	20.97	36.02
2 480		-0.04	-3.08	-0.41	20.97	36.02
2 402		-3.27	-6.99	-3.64	20.97	36.02
2 441	3	0.50	-3.98	0.13	20.97	36.02
2 480		-0.22	-3.82	-0.59	20.97	36.02

Note.

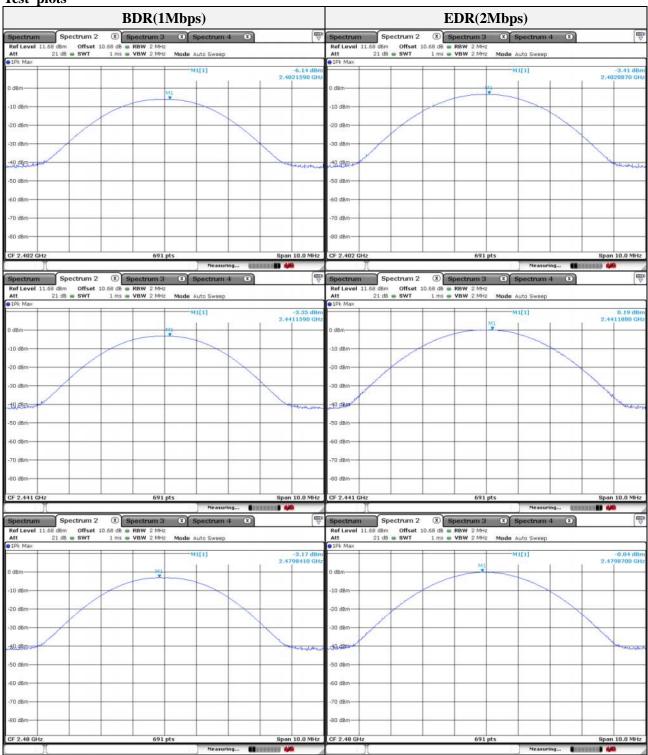
1. Antenna gain : -0.37 dBi

2. The average power was tested using an average power meter.



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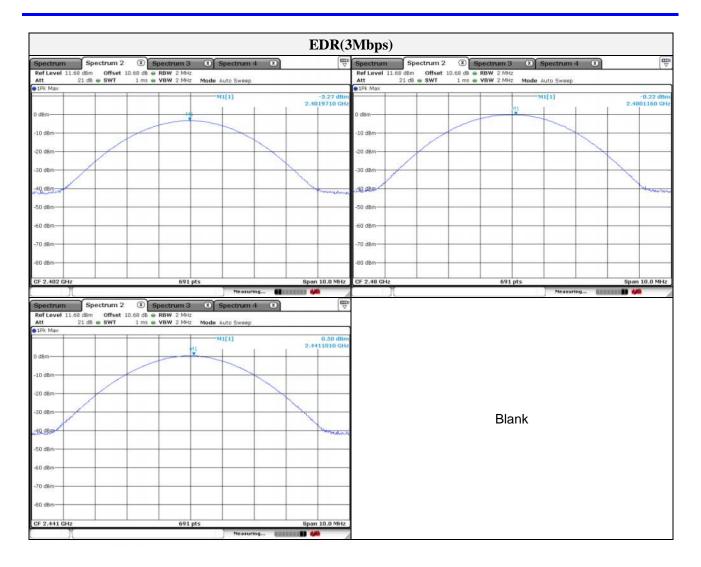




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3.4. Carrier frequency separation

Test procedure

ANSI C63.10-2013 - Section 7.8.2

Test setup

EUT		Attenuator		Spectrum analyzer
-----	--	------------	--	-------------------

Test Setting

- 1. The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:
- 2. Span = wide enough to capture the peaks of two adjacent channels
- 3. RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.
- 4. Video (or Average) Bandwidth (VBW) \ge RBW
- 5. Sweep = auto
- 6. Detector function = peak
- 7. Trace = max hold

Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. Compliance of an EUT with the appropriate regulatory limit shall be determined. A plot of the data shall be included in the test report.

Limit

According to 15.247(a)(1), frequency hopping system operating in 2 400 ~ 2 483.5 Mb. Band may have hopping channel carrier frequencies that are separated by 25 kb or two-third of 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

According to RSS-247 Issue 2, 5.1(b), FHSs shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, FHSs operating in the band 2400-2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided that the systems operate with an output power no greater than 0.125 W.



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Test results

Test results			
Frequency(Mz)	Data rate(Mbps)	Channel Separation (Mz)	Minimum limit (Mz)
2 441	1	1.003	0.691
2 441	3	1.003	0.899

Test plots

Hopping mode_BDR(1Mbps)	Hopping mode_EDR(3Mbps)
Spectrum Spectrum 2 Spectrum 3 Spectrum 4 Employed Ref Level 15.69 dbm Offset 10.69 db R8W 20 3Hz Spectrum 4 Spectr	Spectrum Spectrum 2 Spectrum 3 Spectrum 4 Employed Ref Level 15.66 dBm Offset 10.66 dB RBW 30 HHz Att 25 dB SWT 63.2 µs VBW 30 HHz Mode Auto FFT OPM Max OPM Max VBW 30 HHz Mode Auto FFT
10 dam Mt[1] -3.73 dBm 0 dBm 2.44095220 Gtr 0.07 dB 0 dBm 02[1] 0.07 dB -10 dBm -10 dBm -10 dBm -20 dBm -10 dBm -10 dBm -30 dBm -10 dBm -10 dBm -40 dBm -10 dBm -10 dBm -50 dBm -10 dBm -10 dBm -50 dBm -10 dBm -10 dBm -60 dBm -10 dBm -10 dBm -50 dBm -10 dBm -10 dBm -60 dBm -10 dBm -10 dBm	Doftm Doft 1 0.000 0 dbm 1.00290 Mi 3.49 dbi 0 dbm 3.49 dbi 0.2 2.44095220 Gbi -10 dbm 0.00 dbi 0.00 dbi -20 dbm -0.00 dbi 0.00 dbi -30 dbm -0.00 dbi -0.00 dbi -30 dbm -0.00 dbi -0.00 dbi -30 dbm -0.00 dbi -0.00 dbi -40 dbm -0.00 dbi -0.00 dbi -50 dbm -0.00 dbi -0.00 dbi -70 dbm -0.00 dbi -0.00 dbi
CF 2.441 GHz 691 pts Span 3.0 MHz	CF 2.441 GHz 691 pts Span 3.0 MHz
Marker Type Ref Trc Stimulus Response Function Function Result M1 1 2.4409522 GHz -3.73 dBm D2 M1 1 1.0029 MHz 0.07 dB	Marker Type Ref Trc Stimulus Response Function Function Result M1 1 2.4409522 GHz -3.49 dBm <t< td=""></t<>



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3.5. Number of hopping frequency Test procedure

ANSI C63.10-2013 - Section 7.8.3

Test setting

- 1. The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:
- 2. Frequency range: 2 400 MHz ~ 2 441.5 MHz, 2 441.5 MHz ~ 2 483.5 MHz
- 3. Span = the frequency band of operation $\frac{1}{2}$
- 4. RBW = To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
- 5. VBW \ge RBW
- 6. Sweep = auto
- 7. Detector function = peak
- 8. Trace = max hold

Allow the trace to stabilize. It might prove necessary to break the span up into subranges to show clearly all of the hopping frequencies. Compliance of an EUT with the appropriate regulatory limit shall be determined for the number of hopping channels. A plot of the data shall be included in the test report.

Limit

According to 15.247(a)(1)(iii), for frequency hopping system operating in the 2 400 ~ 2 483.5 Mz bands shall use at least 15 hopping frequencies.

According to RSS-247 Issue 2, 5.1(d), FHSs operating in the band 2400-2483.5 Mz shall use at least 15 hopping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds, multiplied by the number of hopping channels employed. Transmissions on particular hopping frequencies may be avoided or suppressed provided that at least 15 hopping channels are used.



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Test results

		Hop	oping	mode	e_BD	R (1M	(bps)					Нор	ping	g mode	e_ED	R(3M	(bps)		
Spectrur Ref Level Att	n Sp 6.68 d9m 16 d8		0.68 dB 🖷 🖡	Spectrum 3 RBW 300 kH VBW 300 kH	z	Spectrum	4 ⊗			Spectrum Ref Level		Offset 10	×	Spectrum 3 RBW 300 kH VBW 300 kH	3 🛞	Spectrum		-	(EE
1Pk Max	10 00		10.8 μ5	1010 300 171	Mode	AULU FFT				e 1Pk Max	10 00	awr	10.9 µs	1011 300 11	Mode	AULU FFI			
ີ dອກ			0							0 d8m					1		1		
	mane	000	nnnn	mana	0000	AAAA	man	mmm	nnnn	10000	mani	www	man	norm	no	mon	m	m	www
10 080	WWW	WWW	THIL	1444	WWW	HV V V V	WVVV	N V V V	1111	-10 dBm-	0009	V V V V			1.00				
20 dBm-	A A A A	n dan a	1 4 8 1	1.1.1	A 0 4	61.44	12424.0	1111	1.1.1.1	-20 dBm				-	_	-	_		
30 dBm-		-	-	-	+	-		-	-	-30 dBm	-	-	-	-	-			-	-
4D dBm-			_							-40 dBm				_		_			
										de la companya de la comp									
50 dBm—					-				1	-50 dBm		1			-	-	-		
60 dBm	-								-	-60 dBm			-				-		
										44.00-04.00-000									
70 dBm	-		-	1	1	-	1	1	-	-70 dBm		-		-		-		-	
80 dBm-	-					-			-	-80 dBm			-		-	-			
										10112-00									
90 dBm-	0145			-	1 pts			01000	.4415 GHz	-90 dBm				-				1	.4415 GH
	1					Measur	ing	and the local division of the local division	the second s	Start 2.4 0	1			69	1 pts	Measur	ing 🖠		
	X	actrum				Measur	_	stop 2	6 /		X	sectrum 2	Ø			Measur	_	stop 2	
Spectrur Ref Level	n Sp 6.68 d8m		0.68 dB 🖷 🖡	Spectrum (RBW 300 kH	3 X	Spectrum		and the local division of the local division	the second s	Spectrum Ref Level) 1 St 6.69 dBm		.68 d8 👄	Spectrum : RBW 300 kH	3 8) 12	Spectrum	_		
Spectrur Ref Level Att	n Sp		0.68 dB 🖷 🖡	Spectrum 3	3 X		_	and the local division of the local division	6 /	Spectrum Ref Level Att	∬ ĭ		.68 dB 👄	Spectrum :	3 8) 12		_		
Spectrur Ref Level Att 1Pk Max	n Sp 6.68 d8m	Offset 1	0.68 dB 🖷 🖡	Spectrum (RBW 300 kH	3 X	Spectrum	_	and the local division of the local division	6 /	Spectrum Ref Level Att 9 1Pk Max) 1 St 6.69 dBm	Offset 10	.68 dB 👄	Spectrum : RBW 300 kH	3 8) 12	Spectrum	_		
Spectrur Ref Level Att 1Pk Max	n Sp 6.68 d8m	Offset 1	0.68 dB 🖷 🖡	Spectrum (RBW 300 kH	3 X	Spectrum	_	and the local division of the local division	6 /	Spectrum Ref Level Att 9 1Pk Max 0 dBm-) 1 St 6.68 dBm 16 dB	Offset 10 SWT	19 µs	Spectrum : RBW 300 kH VBW 300 kH	3 8) Iz Iz Mode	Spectrum Auto FFT	4 🛞		9 [07
Spectrur Ref Level Att 1Pk Max	n Sp 6.68 d8m	Offset 1	0.68 dB 🖷 🖡	Spectrum (RBW 300 kH	3 X	Spectrum	_	and the local division of the local division	6 /	Spectrum Ref Level Att 9 1Pk Max) 1 St 6.68 dBm 16 dB	Offset 10 SWT	19 µs	Spectrum : RBW 300 kH	3 8) Iz Iz Mode	Spectrum Auto FFT	4 🛞		9 [07
Spectrur Ref Level Att 1Pk Max 1 dBm	n Sp 6.68 d8m	Offset 1	0.68 dB 🖷 🖡	Spectrum (RBW 300 kH	3 X	Spectrum	_	and the local division of the local division	6 /	Spectrum Ref Level Att 1Pk: Max 0 dBm -10 dBm -10 dBm) 1 St 6.68 dBm 16 dB	Offset 10 SWT	19 µs	Spectrum : RBW 300 kH VBW 300 kH	3 8) Iz Iz Mode	Spectrum Auto FFT	4 🛞		9 [07
Spectrur Ref Level Att 1Pk Max 1 dBm	n Sp 6.68 d8m	Offset 1	0.68 dB 🖷 🖡	Spectrum (RBW 300 kH	3 X	Spectrum	_	and the local division of the local division	6 /	Spectrum Ref Level Att 9 1Pk Max 0 dBm) 1 St 6.68 dBm 16 dB	Offset 10 SWT	19 µs	Spectrum : RBW 300 kH VBW 300 kH	3 8) Iz Iz Mode	Spectrum Auto FFT	4 🛞		[E
Spectrur Ref Level Att 1Pk Max 0 dBm 1p dBm 1p dBm 20 dBm	n Sp 6.68 d8m	Offset 1	0.68 dB 🖷 🖡	Spectrum (RBW 300 kH	3 X	Spectrum	_	and the local division of the local division	6 /	Spectrum Ref Level Att 1Pk: Max 0 dBm -10 dBm -10 dBm) 1 St 6.68 dBm 16 dB	Offset 10 SWT	19 µs	Spectrum : RBW 300 kH VBW 300 kH	3 8) Iz Iz Mode	Spectrum Auto FFT	4 🛞		9 [07
Spectrur Ref Level Att 1Pk Max 0 dBm 	n Sp 6.68 d8m	Offset 1	0.68 dB 🖷 🖡	Spectrum (RBW 300 kH	3 X	Spectrum	_	and the local division of the local division	6 /	Spectrum Ref Level Att P1Pk Max 0 dBm -10 dBm -20 dBm) 1 St 6.68 dBm 16 dB	Offset 10 SWT	19 µs	Spectrum : RBW 300 kH VBW 300 kH	3 8) Iz Iz Mode	Spectrum Auto FFT	4 🛞		9 [07
Spectrur Ref Level Att 1Pk Max 0 dBm 	n Sp 6.68 d8m	Offset 1	0.68 dB 🖷 🖡	Spectrum (RBW 300 kH	3 X	Spectrum	_	and the local division of the local division	6 /	Spectrum Ref Level Att P1Pk Max 0 dBm -10 dBm -20 dBm) 1 St 6.68 dBm 16 dB	Offset 10 SWT	19 µs	Spectrum : RBW 300 kH VBW 300 kH	3 8) Iz Iz Mode	Spectrum Auto FFT	4 🛞		9 [07
Spectrur Ref Level Att 1Pk Max 0 dBm 10 dBm 20 dBm 30 dBm 40 dBm	n Sp 6.68 d8m	Offset 1	0.68 dB 🖷 🖡	Spectrum (RBW 300 kH	3 X	Spectrum	_	and the local division of the local division	6 /	Spectrum Rof Lavel Att ● 1Pk Max 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm) 1 St 6.68 dBm 16 dB	Offset 10 SWT	19 µs	Spectrum : RBW 300 kH VBW 300 kH	3 8) Iz Iz Mode	Spectrum Auto FFT	4 🛞		[E
Spectrur Ref Level Att 1Pk Max 0 dBm - 1p sbm - 20 dBm - 30 dBm - 40 dBm	n Sp 6.68 d8m	Offset 1	0.68 dB 🖷 🖡	Spectrum (RBW 300 kH	3 X	Spectrum	_	and the local division of the local division	6 /	Spectrum Ref Level Att • 1Pk Max 0 dBm -10 dBm -20 dBm -30 dBm) 1 St 6.68 dBm 16 dB	Offset 10 SWT	19 µs	Spectrum : RBW 300 kH VBW 300 kH	3 8) Iz Iz Mode	Spectrum Auto FFT	4 🛞		<u>م</u>
Spectrur Ref Level Att 1Pk Max 0 dBm 20 dBm 30 dBm 40 dBm 50 dBm	n Sp 6.68 d8m	Offset 1	0.68 dB 🖷 🖡	Spectrum (RBW 300 kH	3 X	Spectrum	_	and the local division of the local division	6 /	Spectrum Rof Lavel Att ● 1Pk Max 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm) 1 St 6.68 dBm 16 dB	Offset 10 SWT	19 µs	Spectrum : RBW 300 kH VBW 300 kH	3 8) Iz Iz Mode	Spectrum Auto FFT	4 🛞		9 [07
Spectrum Ref Level Att 1Pk Max 0 dBm 10 dBm 30 dBm 40 dBm 50 dBm 60 dBm	n Sp 6.68 d8m	Offset 1	0.68 dB 🖷 🖡	Spectrum (RBW 300 kH	3 X	Spectrum	_	and the local division of the local division	6 /	Spectrum Ref Level Att •19k Max 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm +60 dBm) 1 St 6.68 dBm 16 dB	Offset 10 SWT	19 µs	Spectrum : RBW 300 kH VBW 300 kH	3 8) Iz Iz Mode	Spectrum Auto FFT	4 🛞		9 [07
Spectrum Ref Level Att 1Pk Max 0 dBm 10 dBm 30 dBm 40 dBm 50 dBm 60 dBm	n Sp 6.68 d8m	Offset 1	0.68 dB 🖷 🖡	Spectrum (RBW 300 kH	3 X	Spectrum	_	and the local division of the local division	6 /	Spectrum Ref Lavel Att 10k Max 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm) 1 St 6.68 dBm 16 dB	Offset 10 SWT	19 µs	Spectrum : RBW 300 kH VBW 300 kH	3 8) Iz Iz Mode	Spectrum Auto FFT	4 🛞		[E
Spectrur Ref Level Att JPk Max dBm dBm 10 dBm 20 dBm 30 dBm 40 dBm 50 dBm 60 dBm 60 dBm 70 dBm	n Sp 6.68 d8m	Offset 1	0.68 dB 🖷 🖡	Spectrum (RBW 300 kH	3 X	Spectrum	_	and the local division of the local division	6 /	Spectrum Ref Level Att •19k Max 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm +60 dBm) 1 St 6.68 dBm 16 dB	Offset 10 SWT	19 µs	Spectrum : RBW 300 kH VBW 300 kH	3 8) Iz Iz Mode	Spectrum Auto FFT	4 🛞		[E
Spectrum Ref Level Att 1Pk Max 0 dBm 20 dBm 30 dBm 40 dBm 40 dBm 60 dBm 60 dBm 60 dBm 70 dBm 80 dBm	n Sp 6.68 d8m	Offset 1	0.68 dB 🖷 🖡	Spectrum (RBW 300 kH	3 X	Spectrum	_	and the local division of the local division	6 /	Spectrum Ref Level Att ● 1Pk. Max 0 dBm +10 dBm +20 dBm +30 dBm +60 dBm +60 dBm +60 dBm) 1 St 6.68 dBm 16 dB	Offset 10 SWT	19 µs	Spectrum : RBW 300 kH VBW 300 kH	3 8) Iz Iz Mode	Spectrum Auto FFT	4 🛞		• [#
Spectrur Ref Level Att 1Pk Max 0 dBm	7 Sp 6.68 dBm 16 d8	Offset 1	0.68 dB 🖷 🖡	Spectrum 300 kH	3 X	Spectrum	_		6 /	Spectrum Ref Level Att ● 19k Max 0 dBm -10 dBm -20 dBm -30 dBm -50 dBm -60 dBm -70 dBm)[1 Sp 6.69 dBm 16 dB 	Offset 10 SWT	19 µs	Spectrum : RBW 300 kH VBW 300 kH 	3 8) Iz Iz Mode	Spectrum Auto FFT	4 🛞		9 [07



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3.6. Time of occupancy Test procedure ANSI C63.10-2013 - Section 7.8.4

Test setting

- 1. The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:
- 2. Span = zero span, centered on a hopping channel
- 3. RBW shall be \leq channel spacing and where possible RBW should be set >> 1 / T, where T is the expected dwell time per channel.
- 4. VBW = 1 M $(\geq RBW)$
- 5. Sweep = as necessary to capture the entire dwell time per hopping channel
- 6. Detector function = peak
- 7. Trace = max hold

Use the marker-delta function to determine the transmit time per hop. If this value varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation in transmit time.

Limit

According to 15.247(a)(1)(iii), for frequency hopping system operating in the 2 400 ~ 2 483.5 Mz band, the average time of occupancy on any frequency shall not be greater than 0.4 second within a period of 0.4 seconds multiplied by the number of hopping channels employed.

According to RSS-247 Issue 2, 5.1(d), FHSs operating in the band 2 400 - 2 483.5 Mz shall use at least 15 hopping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds, multiplied by the number of hopping channels employed. Transmissions on particular hopping frequencies may be avoided or suppressed provided that at least 15 hopping channels are used.

A period time = $0.4(s) \times 79 = 31.6(s)$

Time of occupancy on the TX channel in 31.6 sec = time domain slot length \times (hop rate \div number of hop per channel) \times 31.6



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Test results

Packet type	Frequency (Mz)	Dwell time (ms)	A period time (s)	Time of occupancy on the Tx channel	Limit for time of occupancy on the Tx channel
DH1	2 441	0.259	31.6	82.88	400
DH3	2 441	1.255	31.6	200.80	400
DH5	2 441	2.958	31.6	315.52	400
2-DH1	2 441	0.261	31.6	83.52	400
2-DH3	2 441	0.752	31.6	120.32	400
2-DH5	2 441	1.009	31.6	107.63	400
3-DH1	2 441	0.245	31.6	78.40	400
3-DH3	2 441	0.578	31.6	92.48	400
3-DH5	2 441	1.143	31.6	121.92	400

Note:

DH1: Dwell time (ms) × $[(1\ 600 \div 2) \div 79] \times 31.6(s) = 82.88$ (ms) DH3: Dwell time (ms) × $[(1\ 600 \div 4) \div 79] \times 31.6(s) = 200.80$ (ms) DH5: Dwell time (ms) × $[(1\ 600 \div 6) \div 79] \times 31.6(s) = 315.52$ (ms) 2-DH1: Dwell time (ms) × $[(1\ 600 \div 2) \div 79] \times 31.6(s) = 83.52$ (ms) 2-DH3: Dwell time (ms) × $[(1\ 600 \div 4) \div 79] \times 31.6(s) = 120.32$ (ms) 2-DH5: Dwell time (ms) × $[(1\ 600 \div 6) \div 79] \times 31.6(s) = 107.63$ (ms) 3-DH1: Dwell time (ms) × $[(1\ 600 \div 2) \div 79] \times 31.6(s) = 78.40$ (ms) 3-DH3: Dwell time (ms) × $[(1\ 600 \div 4) \div 79] \times 31.6(s) = 92.48$ (ms) 3-DH5: Dwell time (ms) × $[(1\ 600 \div 4) \div 79] \times 31.6(s) = 92.48$ (ms) 3-DH5: Dwell time (ms) × $[(1\ 600 \div 6) \div 79] \times 31.6(s) = 121.92$ (ms)



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				E	DR(2	Mbp	s)							
Spectrum Spectru	um 2 🛞 Spectrum 3	Spectrum	4 ×		Spectrun	n Spe	ectrum 2	× Sp	ectrum 3		Spectrum	4 ×		2
Ref Level 6.68 dBm Off	set 10.68 d8 🖷 RBW 1 MHz				Ref Level	6.68 dBm	Offset 1	0.68 dB 👜 R	BW 1 MHz					
Att 16 dB . SW SGL	T 1 ms VBW 1 MHz				Att SGL	16 dB 🖷	SWT	1 ms V	BW 1 MHz					
• 1Pk Max					1Pk Max			,						
0 dBm		D2[1]		-8.64 dB 289.42 µs	0 d8m			-			[1]	400.		10.61 dBr 492.75 µ
~10 dBm	M	M1[1]		-10,44 dBm 460,87 µs	~10 dBm				1	0	2[1]	02		-0.13 d 260.87 µ
-20 dBm		1	02		-20 dBm							I Î I	1	
10000			IT I		100000									
-30 dBm					-30 dBm									
-40 dBm				-	-40 dBm									
-50 dBm					-50 dBm									
Adaba juga Adaga Adaga -70 dem	an gran way and a second		MANAMANAN	-	150 pm-	apatha <mark>bha</mark> th	happy	ANALA	propheter			YAN	d Willia	weeter
-80 dBm				_	-80 dBm							-		
-90 dBm					-90 dBm									
CF 2.441 GHz Marker	691 p	ts		100.0 µs/	CF 2.441 (Marker	GHz			691	pts				100.0 µs/
	Response 460.87 µs -10.44 dBm 259.42 µs -8.64 dB		Function Re	sult	Type Re M1 D2 N	1	Stimulu 49 26	s 2.75 µs 0.87 µs	Response -10.61 dB -0.13 (m is			tion Result	
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(SE2 11 (1997)														
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		Ready	ADDRESS AND			1					Ready	URNHARD	440	
	set 10.68 dB 🖷 RBW 1 MHz	(X) Spectrum	4 8		Spectrum Ref Level	6.68 dBm		0.68 dB 🖷 R		× 1	Spectrum	4 8		7
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	371 0			in the part	Marker									
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larker	Imulus Response 462.32 µs -22.44 dBm 2.95797 ms 6.80 dB	Function	Function Re	sult	Type Re M1	f Trc 1 1 41 1	Stimulu 69	s 4.06 μs 087 ms	-3.28 d8 -0.82 (m	tion	Func	tion Result	

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				EDR(3Mbps)								
Spectrum Spectrum 2	Spectrum 3	Spectrum	4 (8)				ctrum 2		pectrum 3	8	Spectru	n4 (X	q
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D2 M1 1 247.8 pectrum Bpectrum 2 6 of Level 6.68 GBm Offset 10.6 15 dBm 16 dB SWT 2 dBm 0 6 10 0 dBm 0 0 0	Spectrum 3 Sd = RBW 1 MHz ms VBW 1 MHz	D2[1]	4 0	-0.79 dl 570.26 µ -3.52 dBr 537.66 µ	M1 D2 M1	1	201		-3,43 db -1,22 (m B				
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D2 M1 1 247.8 Spectrum Spectrum 2 Spectrum 2 Spectrum 3 Spectrum 3 Spectrum 4 Spectrum 4 Spectrum 4 Spectrum 3 Spectrum 3 Spectrum 4	Spectrum 3 Sd = RBW 1 MHz ms VBW 1 MHz	D2[1]	4 0	-0.79 dl 570.26 µ -3.52 dBr 537.66 µ	M1 D2 M1	1	201		-3,43 db -1,22 (m B				
02 M1 1 247.8 ipectrum Spectrum 2 ipectrum 2 Spectrum 2 ipectrum 3 Spectrum 2 ipectrum 4 Ipectrum 2 ipectrum 4 Ipectrum 2 ipectrum 4 Ipectrum 4 ipectrum 4 Ipectrum 4 <	Spectrum 3 By I MHz ms VBW 1 MHz ms VBW 1 MHz ms vBW 1 MHz b b b c b c b c c b c	D2[1]	4 0	-0.79 d 578.26 µ -3.52 dв 527.68 µ 227.68 µ	M1 D2 M1	1	201		-3,43 db -1,22 (m B				
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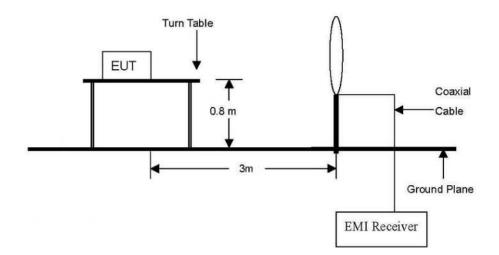


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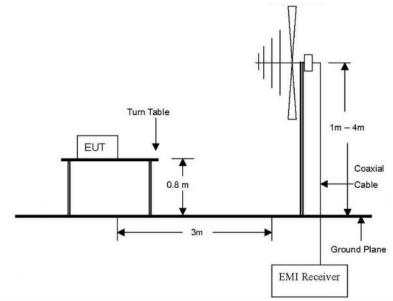
3.7. Radiated restricted band and emissions

Test setup

The diagram below shows the test setup that is utilized to make the measurements for emission from 9 kHz to 30 MHz Emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 30 Mz to 1 GHz emissions.

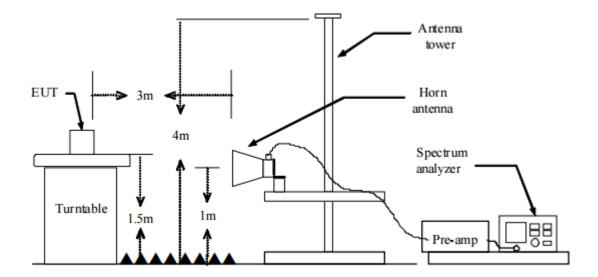




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The diagram below shows the test setup that is utilized to make the measurements for emission from 1 \mathbb{G} to the tenth harmonic of the highest fundamental frequency or to 40 \mathbb{G} emissions, whichever is lower.





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Test procedure

- 1. The EUT is placed on a turntable, which is 0.8 m (below 1 GHz) and 1.5 m (above 1 GHz) above ground plane.
- 2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
- 4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 6. Repeat above procedures until the measurements for all frequencies are complete.
- 7. Spectrum analyzer settings for f < 1 GHz:

Span = wide enough to fully capture the emission being measured

RBW = 100 kHz $VBW \ge RBW$ Sweep = auto Detector function = quasi peakTrace = max hold

- 8. Spectrum analyzer settings for $f \ge 1$ GHz: Peak
- Span = wide enough to fully capture the emission being measured

RBW = 1 Mb $VBW \ge RBW$ Sweep = auto Detector function = peakTrace = max hold

9. Spectrum analyzer settings for $f \ge 1$ GHz: Average

Average value of pulsed emissions.

Unless otherwise specified, when the radiated emission limits are expressed in terms of the average value of the emission and pulsed operation is employed, the average measurement shall determined from the peak field strength after correcting for the worst-case duty cycle as described in 7.5 in ANSI 63.10-2013 & Procedure 9(b) in the KDB 558074 v05r02.

10. Duty Cycle Correction Factor

- a. Time to cycle through all channels = $\Delta t = \tau [ms] \times 79$ channels = 233.682 ms, where $\tau =$ pulse width
- b. 100 ms/ Δt [ms] = H \rightarrow Round up to next highest integer, H =1, where H = number of hops
- c. Worst Case Dwell Time = τ [ms] × H = **2.958** ms
- d. Duty Cycle Correction = 20log (Worst Case Dwell Time/ 100ms) dB = -30.58 dB



Note:

- 1. The spectrum is measured from 9 kHz to the 10th harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1 GHz. Above 1 GHz, average and peak measurements were taken using linearly polarized horn antennas. The worst-case emissions are reported however emissions whose levels were not within 20 dB of the respective limits were not reported.
- 2. The loop antenna was investigated with three polarizations, and horizontal and vertical polarizations were reported as the worst case.
- 3. According to 15.35 (c), as a "duty cycle correction factor", pulse averaging with 20 log(duty cycle) has to be used.

Duty cycle correction factor = $20\log(\text{dwell time}/100 \text{ ms})$

- 4. Emissions below 18 GHz were measured at a 3 meter test distance while emissions above 18 GHz were measured at a 1 meter test distance with the application of a distance correction factor.
- 5. Average test would be performed if the peak result were greater than the average limit.
- 6. Field strength($dB\mu N/m$) = Level($dB\mu N$) + Correction factors(dB/m) + Cable loss(dB) + or F_d(dB)
- 7. Correction factors(dB/m) = Antenna factor(dB/m) + Cable loss(dB) + or Amp. gain(dB)
- 8. Margin(dB) = Limit(dB μ /m) Field strength(dB μ /m)
- 9. The fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z, it was determined that \underline{X} orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in \underline{X} orientation.
- 10. The worst-case emissions are reported however emissions whose levels were not within 20 dB of respective limits were not reported.
- 11. According to exploratory test no any obvious emission were detected from 9 kHz to 30 MHz. Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 30 m open field test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.
- 12. f < 30 MHz, extrapolation factor of 40 dB/decade of distance. $F_d = 40\log(D_m / D_s)$

 $f \ge 30$ MHz, extrapolation factor of 20 dB/decade of distance. $F_d = 20\log(D_m / D_s)$ Where:

 F_d = Distance factor in dB

 D_m = Measurement distance in meters

 D_s = Specification distance in meters



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Limit

According to 15.209(a), for an intentional radiator devices, the general required of field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values :

Frequency (Mz)	Distance (Meters)	Radiated (µV/m)
0.009 ~ 0.490	300	2400/F(klz)
0.490 ~ 1.705	30	24000/F(kHz)
1.705 ~ 30.0	30	30
30 ~ 88	3	100**
88 ~ 216	3	150**
216 ~ 960	3	200**
Above 960	3	500

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands $54 \sim 72$ Mb, $76 \sim 88$ Mb, $174 \sim 216$ Mb or $470 \sim 806$ Mb. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

According to RSS-Gen, Except when the requirements applicable to a given device state otherwise, emissions from licence-exempt transmitters shall comply with the field strength limits :

Frequency (Mz)	Distance (Meters)	Radiated (µN/m)
0.009 ~ 0.490	300	2 400 / F(kHz)
0.490 ~ 1.705	30	24 000 / F(kHz)
1.705 ~ 30.0	30	30
30 ~ 88	3	100
88 ~ 216	3	150
216 ~ 960	3	200
Above 960*	3	500

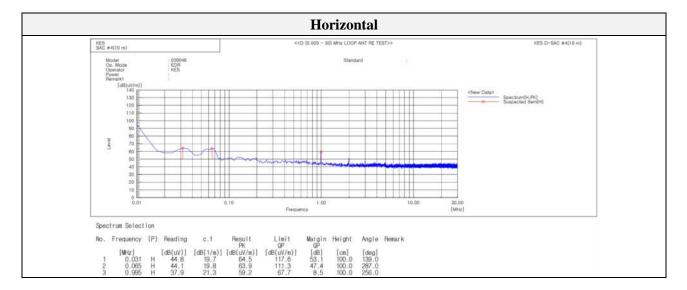
* Unless otherwise specified, for all frequencies greater than 1 GHz, the radiated emission limits for licenceexempt radio apparatus stated in applicable RSSs (including RSS-Gen) are based on measurements using a linear average detector function having a minimum resolution bandwidth of 1 MHz. If an average limit is specified for the EUT, then the peak emission shall also be measured with instrumentation properly adjusted for such factors as pulse desensitization to ensure the peak emission is less than 20 dB above the average limit.

Note: Transmitting devices are not permitted in restricted frequency bands unless stated otherwise in the specific RSS.



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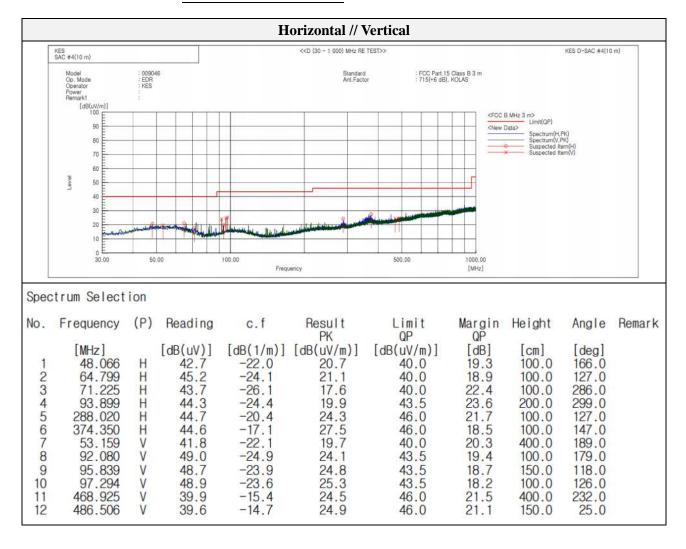
Test results (Below 30 M	Hz)
Mode:	EDR
Transfer rate:	3 Mbps
Distance of measurement:	3 meter
Channel:	39 (Worst case)





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Test results (Below 1 000	MHz)
Mode:	EDR
Transfer rate:	3 Mbps
Distance of measurement:	3 meter
Channel:	39 (Worst case)





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Test results (Above 1 000	MHz)
Mode:	BDR
Transfer rate:	1 Mbps
Distance of measurement:	3 meter
Channel:	00

- Spurious Frequency Level

Frequency (Mbz)	Level (dBµV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBµN/m)	Limit (dBµV/m)	Margin (dB)
2 497.80	49.10	Peak	Н	0.11	-	49.21	74.00	24.79
4 813.00	52.39	Peak	Н	7.06	-	59.45	74.00	14.55
4 813.00	38.81	Average	Н	7.06	-30.58	15.29	54.00	38.71
1 997.10	48.80	Peak	V	-0.99	-	47.81	74.00	26.19
4 813.00	53.19	Peak	V	7.06	-	60.25	74.00	13.75
4 813.00	40.72	Average	V	7.06	-30.58	17.20	54.00	36.80

Band edge

Frequency (Mbz)	Level (dBµN)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBµV/m)	Limit (dBµN/m)	Margin (dB)
2 354.02	49.70	Peak	Н	-0.20	-	49.50	74.00	24.50
2 386.69	49.30	Peak	V	-0.14	-	49.16	74.00	24.84

Spectrum	Sp	ectrum 2) s	pectrum 3		Spectrum	4 (8)			Em l	Spect	rum	Sp	ectrum 2	8	Spectrum 3	× Spectru	m 4 🛛 🛪			E V
Ref Level 1				V 1 MHz						_		vel 1	05.00 dBj			W 1 MHz					
Att 1Pk View	15 0	6 SWT 1	ms 🖷 VBV	V 3 MHz N	lode Auto	Sweep				-	Att		15 5	語 SWT 1	ms 🖶 VB	W 3 MHz Mod	le Auto Sweep				
The Alth				-		al al			40.7	diag V	LPK ST	er ev		1		1 1	144641			10	00 dBu
100 dBµV-				-		14[1]			2.3540		100 dB	N-	_	+ +		+ +	M4[1]				690.04
					M	1[1]				dBpv							M1[1]				37 dt
90 deuv					-	enco -	251		2.3100	ou kinz	90 dBpA	-						10 2	5	2.310	0000
eo deuv											80 dBuA	-									
										11											11
70 dBµV			_	-	-	-			-		70 dBµA					+ +			_		-
60 dBuV										11	10.000										
50 GBHA										11	60 dBµA	-							384 .		
SO deuv				-	*		-		0	1	50 dBul					-		_	- 0	2	1
	-Henrikylan	manne	wholehola	and have the	1 handed	mercu	altour	Jan	and the second	3 4			- minter	mounar	esupre	- marken	- simelound hh	and the second states	rolar	Property	
40 d8µV				-		-	-				40 dBuV					+		+ +	_		
30 dBuV											30 dBul										
SU GELV			· · · · ·								20 0911										
20 dBuV			-	-		-	-	-	-		20 dBuA				_	+ +					
aan et e								F			0.000.0000					1 1			E	2	
10 dBuV-F1-	-		-	1		-	1				10 dBµA	1-F1-	-	+ +		+ +					
CF 2.3525 G	Hz			691	pts			Sp	an 105.0	MHz	CF 2.3	525 G	Hz			691 pt	s		S	pan 105	5.0 MHz
larker											Marker										
Type Ref	Trc	X-value	1	Y-value	Func	tion	Func	tion Re	rsult		Type	Ref	Trc	X-value		Y-value	Function	Func	tion R	esult	
M1	1		1 GHz	45.47 dBp		1404807 - 14					M1	1000	1		1 GHz	45.37 dBµV					
M2 M3	1	2.3	I9 GHz	45.56 dBL 97.37 dBL							M2 M3		1	2.3	9 GHz	47.72 dBµV 91.10 dBµV					
M4	1	2,4020		49.70 dBL							M4	-	1	2.3866		49.30 dBuV					



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Horizo	ntal // Peak for 1 🕀 to	3 GHz		Vertical	// Peak fo	r1GHz to	3 GHz
Spectrum Spectrum 2		X)	Spectrum		Spectrum 3	Spectrum 4	
Ref Level 105.00 dBμV Att 15 dB SWT 3	BW 1 MHz Mode Auto Sweep		Ref Level 105.0 Att	0 dBµV 15 d⊟ SWT 2 ms •	BRBW 1 MHz BW 3 MHz Mod	e Auto Sweep	
1Pk View		an an draue	• 1Pk View		1 1	M2[1]	48.80 dB
100 dBµV	M2[1]	49,10 dBµV 2,49780 GHz	100 dBµV			15 al martine and a	1.99710 G
0 dBµV	M1[1]	95.74 dBµV 2.40230 GHz	90 dBµV			M1[1] M	1 90.90 dB 2.40230 G
			12000				
0 d8µV			80 dBµV				
0 deuv			70 dBµV	_	_		
0 dBuV			60 dBuV				
o dept			00 0001				
0 dBuV	murphing manufacture and the first when the when	المحد والمعالية المحاسمة المحاسمة والمحاسمة	50 dBuV	at manufactures	quesiphication	utor man and all	dolaring an and an and
0 dBµV		and the second second second second second	40 dBµV			100 No. 200	and the second second
6 (B) (4)			00.00.11				
0 deuV			30 dBµV-				
0 d8µV			20 dBµV		-		
LO dBµV			10 dBuV				
Start 1.0 GHz	691 pts	Stop 3.0 GHz	Start 1.0 GHz		691 pts	E	Stop 3.0 GH
1)(Measuring					Measuri	19 REFEREN
Horizon	tal // Peak for 3 GHz to 1	18 GHz		Vertical /	// Peak for	r3 GHz to	18 GHz
Spectrum Spectrum 2	Spectrum 3 8 Spectrum 4	×)	Spectrum	Spectrum 2 (Spectrum 3	(X) Spectrum	
RefLevel 97.00 dBpV Att 10 dB SWT 60	RBW 1 MHz ms VBW 3 MHz Mode Auto Sweep		Ref Level 97.00 Att	dBµV 10 d8 SWT 60 ms	BRBW 1 MHz VBW 3 MHz Mod	e Auto Sweep	· · · · ·
1Pk View			• 1Pk View	10 00 000 00 00 00 00 00 00 00 00 00 00	TON STATE MUS		
0 dBuV	M1[1]	52,39 dBµV 4,8130 GHz	90 dBµV		-	M1[1]	53.19 d8 4.8130 G
6718-5**-5			1999/1912				
0 dBuV			80 dBµV				
0 dBµV			70 d8µV				
0 dBuV			60 dBµV				
MI			MI				
0 dBµV		- Andrew -	50 dBuV		da a		
0 deuv	made the most and have been a man	and a start the production of the	40 dBuV	and the second s	our person	norman	wander and and the
0 d8µV			30 dBuV				
0 dBµV			20 dBµV				
0.dBuV			10 dBuV	_			
dBuV			0 dBuV				
itart 3.8 GHz	691 pts	Stop 18.0 GHz	Start 3.0 GHz	1 1	691 pts		Stop 18.0 GH
J	Measuring	CONTRACTOR 444				Measuri	19 ARTERNA 🖬 🊧
Horizonta	al // Average for 3 🖽 to	18 GHz	Ţ	Vertical //	Average f	or 3 GHz 1	to 18 GHz
Spectrum Spectrum 2		x)	Spectrum		Spectrum 3	Spectrum 4	
RefLevel 105.00 dBµV Att 15 dB SWT d	RBW 1 MH2 S0 ms VBW 3 MH2 Mode Auto Sweep		Ref Level 105.0 Att		 RBW 1 MHz VBW 3 MHz Mo 	de Auto Sweep	
SGL Count 100/100 1Rm AvgPwr			SGL Count 100/1 1Rm AvgPwr	00			
00 dBuV	M1[1]	38.81 dBµV 4.8130 GHz	100 dBLV			M1[1]	40.72 dB 4.8130 G
0.4913/			00 (9:4)			1	
0 deuv			90 dBuV				
0 d8µV			80 dBµV				
0 dBµV			70 dBµV	_			
o deuv			60 dBµV				
0 dBµV			50 dBµV				
0 deuv			40 dBuV				
0 dBµV			30 dBµV	- La		n	
0 dBuV			20 dBu/V				
0 dBuV			10 dBµV				
en en marcha esta la companya de la	691 pts	Stop 18.0 GHz					Stop 18.0 GH
tart 3.0 GHz		stop 18.0 GH2	Start 3.0 GHz		691 pts		Stop 18.0 GH

Note.

1. Average test would be performed if the peak result were greater than the average limit.

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Mode:	BDR
Transfer rate:	1 Mbps
Distance of measurement:	3 meter
Channel:	39

- Spurio	us							
Frequency (MLz)	Level (dBµN)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBµN/m)	Limit (dBµV/m)	Margin (dB)
2 393.60	49.63	Peak	Н	-0.13	-	49.50	74.00	24.50
4 878.00	52.45	Peak	Н	7.54	-	59.99	74.00	14.01
4 878.00	40.31	Average	Н	7.54	-30.58	17.27	54.00	36.73
2 393.60	49.38	Peak	V	-0.13	-	49.25	74.00	24.75
4 878.00	53.15	Peak	V	7.54	-	60.69	74.00	13.31
4 878.00	40.57	Average	V	7.54	-30.58	17.53	54.00	36.47

	Horizor	ntal // Peak	for 1 GHz t	o 3 GHz		Vertical // Pe	eak for 1 🕀 t	o 3 GHz
Spectrum	Spectrum 2	Spectrum 3	Spectrum 4	8	Spectrum	Spectrum 2 🛞 Spec	ctrum 3 🛞 Spectrum	4 (8)
Ref Level 105		BBW 1 MHz ms VBW 3 MHz M	ode Auto Sweep		Ref Level 105.00	2 dBµV 15 dB SWT 2 ms ● VBW 3		
1Pk View	15.06 SWI 2	ms wow 3 mmz m	ode Auto Sweep		1Pk View	15 SE SWI 2 ms # YBW 3	mine mode Auto Sweep	
100 d8µV-				11 49.63 dBµV 2.39360 GHz	100 dBµV-		M2[3]	49.38 dBµV 2.39360 GHz
90 dBµV			M1[1]	98.58 dBµ¥ 2.43990 GHz	90 dBµV	_	M1[1]	92.55 dBµV 2.43990 GHz
80 d8µV					80 dBµV			
70 dBuV					70 dBµV		_	
60 dBµV					60 dBµV			
50 d8µV	an an internet and a	Sauce and a second second second	M	Milmen producer a reason	50 dBuV			17 Jahrahasharidan waxan waxan
40 dBµV	menoparanya	waysed in the second strategy of	Law Manager	and and a special second second	40 dBµ/v	the surface of the second states of the second stat	performance and analysis	high de dia de la frence de la constance de la frence de la constance de
30 dBuV					30 dBµV			
20 d8µV					20 dBµV			
10 dBµV-					10 dBuV			
Start 1.0 GHz		691	pts	Stop 3.0 GHz	Start 1.0 GHz		691 pts	Stop 3.0 GHz
			Measuring	••••			Measur	ing III in an ing ing ing ing ing ing ing ing ing in

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Test report No.: KES-RF-20T0108 Page (36) of (54)

	Horiz			101 5						v	ertica	u // I	cuis i	01 5					
Spectrum	Spectru	m 2 🛞 S	pectrum 3	X 5	Spectrum 4	×		E State	Spectrum	n Sp	ectrum 2	(X) S	ectrum 3	8 (X)	Spectrur	n4 ()	8)		9
Ref Level 97.0		🖷 RBW								97.00 dBµV		● RBW							
1Pk View	10 dB 8V	/T 60 ms 🖷 VBW	3 MHz M	lode Auto	Sweep				Att 1Pk View	10 (8	8 SWT 60	ms 🖝 VBW	3 MHz 1	Mode Auto	o Sweep				
LCR. TIME				M	1[1]			.45 dBµV	L. F. AUDW					1	M1[1]				.15 dBp
in dBµV		-		-	1 1	- E	4.8	3780 GHz	90 dBµV				-	-	1	12	*	4.1	3780 GF
10 dBuV		-				-			80 dBµV	-		-			+	-	-		
O dBuV									70 d8µV										
o augur																			
0 dBµV		-						-	60 dBuV-	1000				-	-	-	-		
MI										M1									
i0 dBµV		-							50 dBµV						-	-	-	100	
day with	washerbert	ashow the angel	HUM AN WAL	and and a second	ALL MADY	inner	unor your	whenthe	40 dBuV	relieves	and we want	reatives	here we	minine	hor	lender	mouth	annul	-and
0 udpv								100	TO UDUV										
Uush o		-							30 dBuV						-	-	_		
0 dBµV	-	-	-						20 dBµV		-	-	-		-	-			
ID dBuV									10 dBuV										
ID depv									10 08µV										
dBLV		-							0 dBuV							_			
tart 3.8 GHz			691	pts			Stop 1		0 dBµV	Hz			691	pts				Stop 1	8.0 GHz
Start 3.8 GHz	[orizo	ntal // A		Mea	3 GHz	to 18	440			X	rtical	// Av		1		uring to 1		ana 440	8.0 GHz
Ref Level 105.	Spectru	m 2 🔊 Si	Verag	e for	3 GHz	to 18	440	8.0 GHz	Start 3.0 G	Ve	ectrum 2	S S	erage	for ®	3 GHz	to 1		ana 440	
Ref Level 105. Att SGL Count 100,	Spectru .00 dBµV 15 d6 8	m 2 🔘 S	Verag	e for	3 GHz	to 18	440	8.0 GHz	Stort 3.0 C Spectrum Ref Level Att SGL Count	Vel 105.00 dBµ 105/100	ectrum 2	(X) S	erage	for	3 GHz	to 1	1 8 G	ana 440	
tart 3.0 GHz H Spectrum Ref Level 105.	Spectru .00 dBµV 15 d6 8	m 2 🔊 Si	Verag	e for (8) (8) (8) (8) (8) (8) (8) (8) (8) (8)	3 GHz Spectrum 4	to 18	B GHz	8.0 GHz	Stort 3.0 C Spectrum Ref Lavel Att	Vel 105.00 dBµ 105/100	ectrum 2	S S	erage	for ®	3 GHz Spectrur	to 1	1 8 G	Hz	(E
Ref Level 105. Att SGL Count 100,	Spectru .00 dBµV 15 d6 8	m 2 🔊 Si	Verag	e for (8) (8) (8) (8) (8) (8) (8) (8) (8) (8)	3 GHz	to 18	B GHz	8.0 GHz	Stort 3.0 C Spectrum Ref Level Att SGL Count	Vel 105.00 dBµ 105/100	ectrum 2	S S	erage	for ®	3 GHz	to 1	1 8 G	and the second s	8.0 GH2
Ref Level 105. Att SGL Count 100/ 1Rm AvgPwr 00 dBuV	Spectru .00 dBµV 15 d6 8	m 2 🔊 Si	Verag	e for (8) (8) (8) (8) (8) (8) (8) (8) (8) (8)	3 GHz Spectrum 4	to 18	B GHz	8.0 GHz	Start 3.0 C Spectrum Ref Lavel Att SGL Count 9 IPm AvgP 100 dBµV	Vel 105.00 dBµ 105/100	ectrum 2	S S	erage	for ®	3 GHz Spectrur	to 1	1 8 G	and the second s	.57 dBp
Ref Level 105, Att SGL Count 100/ 1987 AvgPwr	Spectru .00 dBµV 15 d6 8	m 2 🔊 Si	Verag	e for (8) (8) (8) (8) (8) (8) (8) (8) (8) (8)	3 GHz Spectrum 4	to 18	B GHz	8.0 GHz	Spectrum Ref Level Att SGL Count IRm AvgP	Vel 105.00 dBµ 105/100	ectrum 2	S S	erage	for ®	3 GHz Spectrur	to 1	1 8 G	and the second s	.57 dBp
Rort 3.0 GHz H Spectrum Ref Level 105. Att SGL Count 100/ 18m Avg9wr 100 d8µV- 10 d8µV-	Spectru .00 dBµV 15 d6 8	m 2 🔊 Si	Verag	e for (8) (8) (8) (8) (8) (8) (8) (8) (8) (8)	3 GHz Spectrum 4	to 18	B GHz	8.0 GHz	Start 3.0 C Spectrum Ref Lavel Att SGL Count 9 IPm AvgP 100 dBµV	Vel 105.00 dBµ 105/100	ectrum 2	S S	erage	for ®	3 GHz Spectrur	to 1	1 8 G	and the second s	.57 dBp
Bart 3.0 GHz H Spectrum Ref Level 105. Att SGL Count 100, 118m AvgPwr 100 dBµV 10 dBµV 10 dBµV 10 dBµV	Spectru .00 dBµV 15 d6 8	m 2 🔊 Si	Verag	e for (8) (8) (8) (8) (8) (8) (8) (8) (8) (8)	3 GHz Spectrum 4	to 18	B GHz	8.0 GHz (₩) (₩) (0) (0) (0) (0) (0) (0) (0) (0	Start 3.0 C Spectrum Ref Level Att SGL Count IRm AvgP 100 dBµV 90 dBµV 80 dBµV	Vel 105.00 dBµ 105/100	ectrum 2	S S	erage	for ®	3 GHz Spectrur	to 1	1 8 G	and the second s	(T
Bart 3.0 GHz H Spectrum Ref Level 105. Att SGL Count 100, 118m AvgPwr 100 dBµV 10 dBµV 10 dBµV 10 dBµV	Spectru .00 dBµV 15 d6 8	m 2 🔊 Si	Verag	e for (8) (8) (8) (8) (8) (8) (8) (8) (8) (8)	3 GHz Spectrum 4	to 18	B GHz	8.0 GHz (₩) (₩) (0) (0) (0) (0) (0) (0) (0) (0	Start 3.0 C Spectrum Ref Lavel Att SGL Count 9100 dBµV 900 dBµV	Vel 105.00 dBµ 105/100	ectrum 2	S S	erage	for ®	3 GHz Spectrur	to 1	1 8 G	and the second s	.57 dBp
Rart 3.0 GHz	Spectru .00 dBµV 15 d6 8	m 2 🔊 Si	Verag	e for (8) (8) (8) (8) (8) (8) (8) (8) (8) (8)	3 GHz Spectrum 4	to 18	B GHz	8.0 GHz	Start 3.0 C Spectrum Ref Level Att SGL Count IRm AvgP 100 dBµV 90 dBµV 80 dBµV	Vel 105.00 dBµ 105/100	ectrum 2	S S	erage	for ®	3 GHz Spectrur	to 1	1 8 G	and the second s	.57 dBp
Rort 3.0 GHz H Spectrum Ref Level 105. Att SGL Count 100/ 18m Avg9wr 100 d8µV- 10 d8µV-	Spectru .00 dBµV 15 d6 8	m 2 🔊 Si	Verag	e for (8) (8) (8) (8) (8) (8) (8) (8) (8) (8)	3 GHz Spectrum 4	to 18	B GHz	8.0 GHz	Stort 3.0 C Spectrum Ref Level Att SGL Count SGL Count IPm AvgP 100 dBµV 90 dBµV 70 dBµV	Vel 105.00 dBµ 105/100	ectrum 2	S S	erage	for ®	3 GHz Spectrur	to 1	1 8 G	and the second s	.57 dBp
Rart 3.0 GHz H Spectrum Rart Lavel 105. Ration 100,000 Spic Lound 100,000 IFm AugPwr 00 dBuV 00 dBuV 0 dBuV 0 dBuV 0 dBuV 0 dBuV 0 dBuV	Spectru .00 dBµV 15 d6 8	m 2 🔊 Si	Verag	e for (8) (8) (8) (8) (8) (8) (8) (8) (8) (8)	3 GHz Spectrum 4	to 18	B GHz	8.0 GHz	Stort 3.0 C Spectrum Ref Level Att SGL Count SGL Count IPm AvgP 100 dBµV 90 dBµV 70 dBµV	Vel 105.00 dBµ 105/100	ectrum 2	S S	erage	for ®®	3 GHz Spectrur	to 1	1 8 G	and the second s	.57 dBp
Itart 3.0 GHz H Spectrum Ref Level 105. Raf Level 105. Stat. Count 100, IFm AvgPwr 00 dBµV 0 dBµV	Spectru .00 dBµV 15 d6 8	m 2 🔊 Si	Verag	e for (8) (8) (8) (8) (8) (8) (8) (8) (8) (8)	3 GHz Spectrum 4	to 18	B GHz	8.0 GHz	Stort 3.0 C Spectrum Ref Level Att SGL Count SGL Count IEm AvgP 100 dBµV— 90 dBµV— 60 dBµV— 50 dBµV— 50 dBµV—	Vel 105.00 dBµ 105/100	ectrum 2	S S	erage	for ®®	3 GHz Spectrur	to 1	1 8 G	and the second s	.57 dBp
Itart 3.0 GHz H Spectrum Ref Level 105. Raf Level 105. Stat. Count 100, IFm AvgPwr 00 dBµV 0 dBµV	Spectru .00 dBµV 15 d6 8	m 2 🔊 Si	Verag	e for (8) (8) (8) (8) (8) (8) (8) (8) (8) (8)	3 GHz Spectrum 4	to 18	B GHz	8.0 GHz	Stort 3.0 C Spectrum Ref Level Att SGL Count 9 IPm AvgP 100 dBµV 90 dBµV 80 dBµV 70 dBµV 60 dBµV	Vel 105.00 dBµ 105/100	ectrum 2	S S	erage	for ®®	3 GHz Spectrur	to 1	1 8 G	and the second s	.57 dBp
Rart 3.0 GHz H Spectrum Raf Lavel 105. No dbuV 10 dbuV	Spectru .00 dBµV 15 d6 8	m 2 🔊 Si	Verag	e for (8) (8) (8) (8) (8) (8) (8) (8) (8) (8)	3 GHz Spectrum 4	to 18	B GHz	8.0 GHz	Stort 3.0 C Spectrum Ref Lavel Att SGL Count SGL Count 90 dBµV— 90 dBµV— 80 dBµV— 60 dBµV— 50 dBµV— 40 dBµV—	Vel 105.00 dBµ 105/100	ectrum 2	S S	erage	for ®®	3 GHz Spectrur	to 1	1 8 G	and the second s	.57 dBp
Rart 3.0 GHz H Spectrum Raf Lavel 105. No dbuV 10 dbuV	Spectru .00 dBµV 15 d6 8	m 2 🔊 Si	Verag	e for (8) (8) (8) (8) (8) (8) (8) (8) (8) (8)	3 GHz Spectrum 4	to 18	B GHz	8.0 GHz	Stort 3.0 C Spectrum Ref Level Att SGL Count SGL Count IEm AvgP 100 dBµV— 90 dBµV— 60 dBµV— 50 dBµV— 50 dBµV—	Vel 105.00 dBµ 105/100	ectrum 2	S S	erage	for ®®	3 GHz Spectrur	to 1	1 8 G	and the second s	.57 dBp
Rart 3.0 GHz H Spectrum Rart Lavel 105. Rart Lavel 105. Sci, Count 100, 18m AugPwr 00 dBµV 00 dBµV	Spectru .00 dBµV 15 d6 8	m 2 🔊 Si	Verag	e for (8) (8) (8) (8) (8) (8) (8) (8) (8) (8)	3 GHz Spectrum 4	to 18	B GHz	8.0 GHz ♥ .31 dBµV 3780 GHz	Stort 3.0 C Spectrum Ref Lavel Att SGL Count SGL Count 90 dBµV— 90 dBµV— 80 dBµV— 60 dBµV— 50 dBµV— 40 dBµV—	Vel 105.00 dBµ 105/100	ectrum 2	S S	erage	for ®®	3 GHz Spectrur	to 1	1 8 G	and the second s	.57 dBt
Rart 3.0 GHz Hart 3.0 GHz H Spectrum Raf Lavel 105. SGL Count 100, 1Rm AvgPwr 100 dBuV 10 dBuV	Spectru .00 dBµV 15 d6 8	m 2 🔊 Si	Verag	e for (8) (8) (8) (8) (8) (8) (8) (8) (8) (8)	3 GHz Spectrum 4	to 18	B GHz	8.0 GHz	Stort 3.0 C Spectrum Ref Lavel Att SGL Count 91Pm AvgP 100 dBµV— 90 dBµV— 90 dBµV— 90 dBµV— 50 dBµV— 50 dBµV— 50 dBµV— 30 dBµV— 20 dBµV—	Vel 105.00 dBµ 105/100	ectrum 2	S S	erage	for ®®	3 GHz Spectrur	to 1	1 8 G	and the second s	.57 dBp
Rart 3.0 GHz H Spectrum Rart Lavel 105. Rart Lavel 105. Sci, Count 100, 18m AugPwr 00 dBµV 00 dBµV	Spectru .00 dBµV 15 d6 8	m 2 🔊 Si	Verag	Made Auto	3 GHz Spectrum 4	to 18	40 3 GHz 40 4.5	8.0 GHz	Spectrum Ref Lavel Att SGL Count 90 dBµV 90 dBµV 60 dBµV 60 dBµV 50 dBµV 60 dBµV 40 dBµV 30 dBµV	M Vei 105.00 db, 100/100 wr	ectrum 2	S S	erage sectrum 3 w 1 MHz	for ®®	3 GHz Spectrur	to 1	1 8 G	Hz	.57 dBp

Note.

1. Average test would be performed if the peak result were greater than the average limit.



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Mode:	BDR
Transfer rate:	1 Mbps
Distance of measurement:	3 meter
Channel:	78

- Spurio	us							
Frequency (Mbz)	Level (dBµN)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBµN/m)	Limit (dBµN/m)	Margin (dB)
1 843.70	49.06	Peak	Н	-2.41	-	46.65	74.00	27.35
2 083.90	48.23	Peak	V	-0.77	-	47.46	74.00	26.54
4 965.00	47.39	Peak	V	8.18	-	55.57	74.00	18.43
4 965.00	37.61	Average	V	8.18	-30.58	15.21	54.00	38.79

	R	estricte	d band //	Horizon	tal // F	Peak		F	Restricte	ed band /	/ Vertica	l // Peak	
Spectrum		Spectrum 2	Spectrum 3	3 🙁 Spectru	m 4 💌		Spectrum	S	pectrum 2	3 Spectrum 3	Spectru	m 4 🛞	9
Ref Level 1	04.00	dBuV	BBW 1 MHz				Ref Level	104.00 dB	uv	BBW 1 MHz			
Att		5 dB SWT 1	ns 🖶 VBW 3 MHz 🕴	Mode Auto Sweep			Att	15	da SWT 1 ms	WBW 3 MHz M	ode Auto Sweep		
1Pk View							e 1Pk View						
100 c96V				M2[1]		46.90 dBt					_M3[1]	1	89,18 dB
LOU CEPT				1.		2.500000 G	12						2,4801530 G
90 deuv				M1[1]		47.31 dB					M1[1]		46,27 dB
						2.4835000 G	IZ /					10 IV	2.4835000 G
BD dBuV							- 80/dBuV-						
D dBuV	-						- Vo dBuV-		+				
60 dBµV	+				-		- 60 dBuV						
	1												
50 dBuV	1		س ال مربع حمد الم مسعد الم		MP	and	- 50 dBuV-	L. M.	Table 5 Alas - Late -	moundain	1	142	WARRAN PROPERTY
			and a surrow of the lot of the lo	anathe we berry		and the second s		and a second		a second second		- Harrison and and and and and and and and and an	and the second
40 dBµV	-						40 dBµV-						
30 dBuV	_						- 30 dBµV-		+				
20 deuv							- 20 dBµV-						
					F2							F2	
10 dBuV							- 10 dBuV-	FI					
Start 2.478	GHz	<u> </u>	691	L pts		Stop 2.51 GH	Start 2.47	GHz	· · ·	691	its		Stop 2.51 GH
Marker			0//00	alace			Marker				COLUMN TO A COLUMNT TO A COLUMN TO A COLUMNT TO A COLUMNTA A COLUMNT TO A COLUMNT TO A COLUMNTA A COLUMNTA A COLUMNT TO A COLUMNT T		
Type Ref	Trc	X-value	Y-value	Function	Fu	nction Result	Type Ref	Trc	X-value	Y-value	Function	Function	Result
M1	1	2,483	5 GHz 47.31 dB	μV	1000		M1	1	2.4835 G	Hz 46.27 dBµ	/		29000190253N
M2	1		5 GHz 46.90 dB				M2	1	2.5 G				
M3	1	2.47996	8 GHz 95.41 dB	μv			M3	1	2.480153 G	Hz 89.18 dBµ	1		



Test report No.: KES-RF-20T0108 Page (38) of (54)

Horizo	ntal // Peak for 1	GHz to 3 G	łz		Vert	tical // I	Peak for	·1 GHz	to 3 GH	Z
Spectrum Spectrum 2	Spectrum 3 🛞 Spe	ctrum 4 🛛 🔊	(EED)	Spectrum	Spectrur	n 2 🛛 S	pectrum 3	Spectrum	n 4 🛪	(m
Ref Level 105.00 dBpV	RBW 1 MHz 2 ms VBW 3 MHz Mode Auto Swe	ep			105.00 dBµV		/ 1 MHz / 3 MHz Mode	Auto Sweep		
• 1Pk View	M2[1		49,06 dBpV	• 1Pk View		1	1 1	M2[3]		48.23 dBp
100 dBµV	MILI	ML	1.84370 GHz 95.86 dBµV	100 dBµV				M1[1]		2.88390 GH 89.12 dBp
90 dBµV		i n li n	2.48050 GHz	90 dBµV					I I I	2.48050 GH
80 d8µV				80 dBµV						
2010 1000										
70 d8µV				70 dBµV						
60 dBµV				60 dBµV				-		
50 dBµV	ME			50 dBµV		_		ž –		
40 dBuV	burning during an and	ad she that have the	mindrovedparbas	40 dBulv	10-1-1-1-1-1-1-	monturinan	ferministructure	inantibarias	Mar Whiteway	Alter and a second
+0 dBpv				40 0BUV						
30 d8µV		_		30 dBµV						
20 deµV				20 dBµV					-	
10 dBuV				10 dBuV						
Stort 1.0 GHz	691 pts		Stop 3.0 GHz	Start 1.0 G	Hz		691 pts			Stop 3.0 GHz
		Measuring	anna 440 /	1	X			Meas	uring	RRRA B 4/4
Horizor	ntal // Peak for 3	Hz to 18 (Hz		Vert	ical // P	eak for	3 GHz t	o 18 G	łz
Spectrum 2	Spectrum 3 🗶 Spe	ctrum 4 🛞		Spectrum	Spectrur	n 2 🛛 S	pectrum 3	* Spectrun	n4 🛞	
Ref Level 97.00 dBpV Att 10 dB SWT 50	RBW 1 MHz Mode Auto Swe	ep		Ref Level Att			/ 1 MHz / 3 MHz Mode	Auto Sweep		
e 1Pk View				e 1Pk View			1 1	M1[1]		47.39 dBu
90 dBuV				90 dBµV				- I	r. 7	4,9650 GH
80 d8µV				80 dBµV						
70 d8µV				70 dBµV				-	-	
60 dBµV				60 dBµV					+ +	
50 dBµV				50 dBµ//	MI	_			-	
unan management	mannement	emprennent	marganet	antomore	minumente	human	unand	num	yuman	man
40 d8µV				40 dBµV						
30 dBµV				30 dBµV					-	
20 d8µV				20 d8µV-		_		_		
10 dBuV				10 dBµ/v						
10 0001				10 0000						
0 d8µV- Start 3.0 GHz	691 pts		Stop 18.0 GHz	0 dBpV	H2		691 pts			Stop 18.0 GHz
aturt 5.0 GHZ		Measuring	ANAD 440	ature 5.0 C	X		091 pts	Meas	uring 🚺	
Horizor	ntal // Peak for 3	Hz to 18 (Жz		Verti	ical // P	eak for	3 GHz t	o 18 G	łz
				Spectrum				Spectrun	n 4 🛛 🛪	(E
				Att		RB 7T 50 ms = VB	WIMH2 WIMHZ Mod	Auto Sweep		
				SGL Count			n			
				100 dBµV-				M1[1]		37.61 dBµ 4.9650 GH
				90 dBµV						
				80 dBµV-						
				70 dBµV					+ +	
	N/A			60 dBµ/v		_				
				50 dBµV						
				78.000						
				40 dBµV-		1				~~~~
				30 dBµV						
				20 dBµ/v		_				
				10 dBuV Start 3.0 G	H2		691 pts			Stop 18.0 GHz
				ature 3.0 G	31		oar bre	Ready	ADDRESS OF	the second s

Note.

1. Average test would be performed if the peak result were greater than the average limit.

2. No spurious emission were detected Band edge.

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3701, 40, Simin-daero 365beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea Tel: +82-31-425-6200 / Fax: +82-31-424-0450 www.kes.co.kr Test report No.: KES-RF-20T0108 Page (39) of (54)

Mode:	EDR
Transfer rate:	3 Mbps(Worst case)
Distance of measurement:	3 meter
Channel:	00

- Spurio	us							
Frequency (Mbz)	Level (dBµV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBµV/m)	Limit (dBµN/m)	Margin (dB)
1 597.70	49.25	Peak	Н	-4.78	-	44.47	74.00	29.53
4 813.00	52.66	Peak	Н	7.06	-	59.72	74.00	14.28
4 813.00	39.29	Average	Н	7.06	-30.58	15.77	54.00	38.23
2 497.80	49.94	Peak	V	0.11	-	50.05	74.00	23.95
4 813.00	56.66	Peak	V	7.06	-	63.72	74.00	10.28
4 813.00	40.74	Average	V	7.06	-30.58	17.22	54.00	36.78

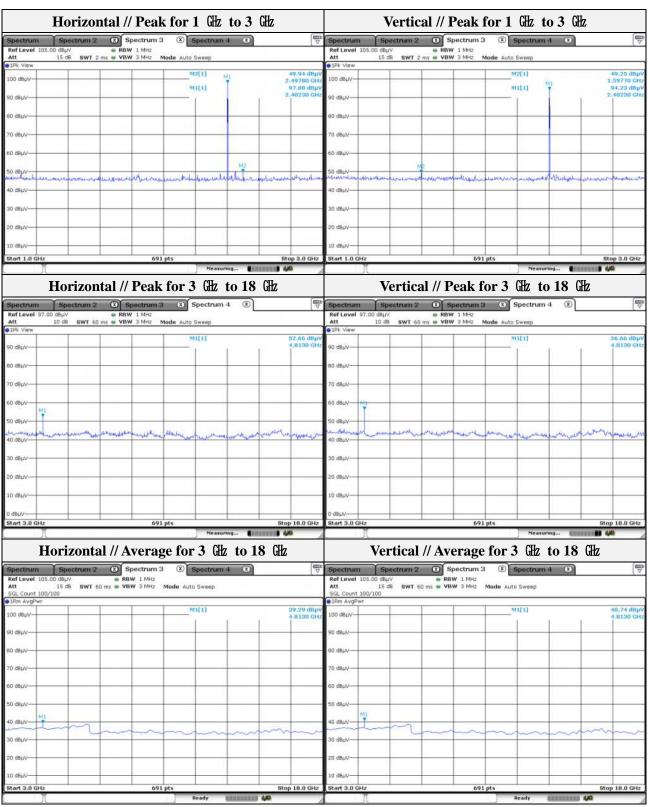
- Band edge

Frequency (Mbz)	Level (dBµN)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBµV/m)	Limit (dBµN/m)	Margin (dB)
2 373.77	48.70	Peak	Н	-0.16	-	48.54	74.00	25.46
2 353.87	49.34	Peak	V	-0.20	-	49.14	74.00	24.86

	Re	estrict	ed ba	and //	Horiz	zonta	l // Pea	ak				R	Restric	ted	band //	Vertic	al // P	Peak		
Spectrum Ref Level 1	05.00 di			Rectrum 3 W 1 MHz	Iode Auto S	pectrum -	4 8					105.00 dB		e RB	Spectrum 3 W 1 MHz W 3 MHz Mo	Spect		X		
1Pk View			1114		inter space a	meak.					Pk View			1112 - 10		an Hold Sheep				
40 d8µV 30 d8µV 20 d8µV	هوري	an an Alar and Alar and Alar			M.	([1]			49.34 m .353070 4 45.88 d .310000 4	10 10 11 90 11 90 11 90 11 90 11 90 11 90 11 90 11 90 11 90 11 90 11 90 11 90 11 90 11 90 11 90 11 90 11 90 12 90 130 90 10 10 10 10	dBµV	ri haran di 19		الم		M4[1]	het werde Marger		2.3737 45.6 2.3100	52 đếµV 300 GHz
10 dBuV-FI-											dBuV-F1	-		1						
CF 2.3525 G	Hz			691	pts			Spar	105.0 M		2.3525	GHz			691 pt	5			Span 105.	.0 MHz
Marker Type Ref M1 M2 M3 M4	1 1 1 1	2 2.40	e 31 GHz 39 GHz 188 GHz 387 GHz	Y-value 45.88 dBs 46.70 dBs 97.86 dBs 49.34 dBs	iV IV	ion	Function	on Resu	dt.		rker <u>ype Ref</u> M1 M2 M3 M4	1 1 1 1		91 GHz 99 GHz 88 GHz	Y-value 45.62 dBµV 47.11 dBµV 95.48 dBµV 48.70 dBµV	Function		Function I	tesult	
	M				10	Measuri	ing 🗰 💷	ABER 4	10			N				N	leasuring	CRANES!	1 4/0	_



Test report No.: KES-RF-20T0108 Page (40) of (54)



Note.

1. Average test would be performed if the peak result were greater than the average limit.

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Test report No .: KES-RF-20T0108 Page (41) of (54)

Mode:	EDR
Transfer rate:	3 Mbps(Worst case)
Distance of measurement:	3 meter
Channel:	39

<u>- Spurio</u>	us							
Frequency (Mbz)	Level (dBµN)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBµN/m)	Limit (dBµN/m)	Margin (dB)
2 489.10	50.29	Peak	Н	0.09	-	50.38	74.00	23.62
4 878.00	50.77	Peak	Н	7.54	-	58.31	74.00	15.69
4 878.00	38.35	Average	Н	7.54	-30.58	15.31	54.00	38.69
4 878.00	53.99	Peak	V	7.54	-	61.53	74.00	12.47
4 878.00	39.81	Average	V	7.54	-30.58	16.77	54.00	37.23

Ho	orizontal // F	Peak for 1	GHz to 3	GHz		Vertic	al // Peak f	or 1 GHz t	o3GHz	
and the second se			pectrum 4 🔹	(ETD)	Spectrum	Spectrum 2	Spectrum 3	(X) Spectrum	4 (8)	Em Em
Att 15 d			weep		Ref Level 10 Att		BBW 1 MHz ms BVBW 3 MHz Mi	ode Auto Sweep		
●1Pk View			and the second se		e 1Pk View		un presidente de la construcción de			
100 dBµV			[1] M1	50.29 dBµV 2.48910 GHz 100.08 dBµV	100 dBµV-			M3[3]	ML	94.24 dBpV 2.44280 GHz
90 dBµV		MI		2,44280 GHz	90 dBuV					-
80 d8µV				-	80 dBµV					
70 dBµV					70 dBµV		· · · · ·			-
60 dBuV					60 dBµV					
50 dBµV	mal a have been a since the set of the		M2	and the first factors and	50 dBuV		University and			and the second
40 dBµV	MARAA MARAAMA AMARAAMA	kealer configuration and	Presidente and	and an	40 d8µV		and a second second second	and an and the second	and the production of the product of	
30 dBµV					30 dBµV					
20 dBµV					20 dBµV					
10 dBµV					10 dBµV					
Start 1.0 GHz		691 pts		Stop 3.0 GHz	Start 1.0 GHz	2	691 p	ots	8	top 3.0 GHz
- Y			Measuring	INTANA 40				Measur	ng	10



Test report No.: KES-RF-20T0108 Page (42) of (54)

ak for 3 GHz to 18 GHz	Vertical //	to 18 GHz	Iorizontal // Peak for 3 GHz	Horiz
ctrum 3 8 Spectrum 4 🛞		m 4 🗷 🕅	Spectrum 2 3 Spectrum 3 8 Spectrum	ectrum Spectr
MHz MHz Mode Auto Sweep	evel 97.00 d8µV 10 d8 SWT 60 ms ● V			fLevel 97.00 dBµV t 10 dB 8
	View			Pk View
M1[1]	W-	50.77 dBµV 4.8780 GHz	M1[1]	dBuV
	h			ueuv
	W			dBuV
	w			dBuV-
				GODY
	UV M1			dBµV
	w 1			dBuV
war when a say i as a marked	mander and some and and	in me marking an	many marker of the of the	and an and
me and such a formation that have	UV UV	and the self and the second second a	and the set of the set	dBuV
	w			d8uV
	uv-			dBµV
	N-			dBuV-
	20			2002
	v			BµV-
691 pts S Measuring The suring state of the	3.0 GHz	stop 18.0 GHz suring 10 GHz Hz to 18 GHz	orizontal // Average for 3 G	art 3.0 GHz
Measuring	3.0 GHz Vertical // A trum Spectrum 2 3 svel 105.00 dBµV 15 dB swt 60 ms	Hz to 18 GHz	Trizontal // Average for 3 G Spectrum 2 Spectrum 3 BW BW Stoff SWT 60 ms VBW Mode Auto Sweep	Horizo
mage for 3 GHz to 18 GHz to 18 GHz trum 3 © Spectrum 4 ©	2.0 GHz Vertical // A trum Spectrum 2 Spectrum 2	Hz to 18 GHz	Trizontal // Average for 3 G Spectrum 2 Spectrum 3 BW BW Stoff SWT 60 ms VBW Mode Auto Sweep	Horizo
mage for 3 GHz to 18 GHz to 18 GHz trum 3 © Spectrum 4 ©	2.0 GHz Vertical // A trum Spectrum 2 Spectrum 2	suring ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★	Trizontal // Average for 3 G Spectrum 2 Spectrum 3 BW BW Stoff SWT 60 ms VBW Mode Auto Sweep	HORIZO HorizO Mectrum Spectr If Level 105.00 dBy/ t t 15 dB 2. Count 100/100 m AvgPwr
Measuring	2.0 GHz Vertical // A trum Spectrum 2 Spectrum 2	suring ₩ ₩	Descrizontal // Average for 3 G Spectrum 2 Spectrum 3 (3) Spectrum 1 dBp/ 1 5 db SWT 60 ms = VBW 3 MHz 15 db SWT 60 ms = VBW 3 MHz 10 db SWT 60 ms = VBW 5 M	Horizo
Measuring	2.0 GHz Vertical // A trum Spectrum 2 Spectrum 2	suring ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★	Descrizontal // Average for 3 G Spectrum 2 Spectrum 3 (3) Spectrum 1 dBp/ 1 5 db SWT 60 ms = VBW 3 MHz 15 db SWT 60 ms = VBW 3 MHz 10 db SWT 60 ms = VBW 3 M	HORIZO HorizO Mectrum Spectr If Level 105.00 dBy/ t t 15 dB 2. Count 100/100 m AvgPwr
Measuring	2.0 GHz Vertical // A vertical // A spectrum 2 ① source 105:00 dBµV i 5 dB swr 60 ms = vert 100/100 AvgPwr BµV	suring ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★	Descrizontal // Average for 3 G Spectrum 2 Spectrum 3 (3) Spectrum 1 dBp/ 1 5 db SWT 60 ms = VBW 3 MHz 15 db SWT 60 ms = VBW 3 MHz 10 db SWT 60 ms = VBW 3 M	Horizo
Measuring	2.0 GHz Vertical // A Spectrum 2 Source	suring ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★	Descrizontal // Average for 3 G Spectrum 2 Spectrum 3 (3) Spectrum 1 dBp/ 1 5 db SWT 60 ms = VBW 3 MHz 15 db SWT 60 ms = VBW 3 MHz 10 db SWT 60 ms = VBW 3 M	Ant 3.0 GHz Horizo Bectrum Spectr If Level 105.00 dByV 15 dB Lount 100/100 3m AvgPwr 0 dByV dByV dByV dByV
Measuring	2.0 GHz Vertical // A Spectrum 2 vertical // A 15.00 dBµV 15 dB swr 60 ms = vagPwr BµV vv	suring ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★	Descrizontal // Average for 3 G Spectrum 2 Spectrum 3 (3) Spectrum 1 dBp/ 1 5 db SWT 60 ms = VBW 3 MHz 15 db SWT 60 ms = VBW 3 MHz 10 db SWT 60 ms = VBW 3 M	Horizo
Measuring	2.0 GHz Vertical // A Spectrum 2 Source	suring ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★	Descrizontal // Average for 3 G Spectrum 2 Spectrum 3 (3) Spectrum 1 dBp/ 1 5 db SWT 60 ms = VBW 3 MHz 15 db SWT 60 ms = VBW 3 MHz 10 db SWT 60 ms = VBW 3 M	Ant 3.0 GHz Horizo Bectrum Spectr If Level 105.00 dByV 15 dB Lount 100/100 3m AvgPwr 0 dByV dByV dByV dByV
Measuring	3.0 GHz Vertical // A trum Spectrum 2 avel 15.5 d swr 60 ms AvgPwr BuV	suring ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★	Descrizontal // Average for 3 G Spectrum 2 Spectrum 3 (3) Spectrum 1 dBp/ 1 5 db SWT 60 ms = VBW 3 MHz 15 db SWT 60 ms = VBW 3 MHz 10 db SWT 60 ms = VBW 3 M	Image: state
Measuring	2.0 GHz Vertical // A trum Spectrum 2: sevel 105.00 dBµV count 100/105 BµV wV wV wV	suring ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★	Descrizontal // Average for 3 G Spectrum 2 Spectrum 3 (3) Spectrum 1 dBp/ 1 5 db SWT 60 ms = VBW 3 MHz 15 db SWT 60 ms = VBW 3 MHz 10 db SWT 60 ms = VBW 3 M	the second
Measuring	3.0 GHz Vertical // A trum Spectrum 2 avel 15.5 d swr 60 ms AvgPwr BuV	suring ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★	Descrizontal // Average for 3 G Spectrum 2 Spectrum 3 (3) Spectrum 1 dBp/ 1 5 db SWT 60 ms = VBW 3 MHz 15 db SWT 60 ms = VBW 3 MHz 10 db SWT 60 ms = VBW 3 M	Image: state
Measuring	2.0 GHz Vertical // A trum Spectrum 2 swel 105.00 dBµV 15 dB swr 60 ms = count 100/100 AvgBwr BµV V V V V M M M M M M M M M	suring ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★	Descrizontal // Average for 3 G Spectrum 2 Spectrum 3 (3) Spectrum 1 dBp/ 1 5 db SWT 60 ms = VBW 3 MHz 15 db SWT 60 ms = VBW 3 MHz 10 db SWT 60 ms = VBW 3 M	Image: Sector with the sector withe sector with the sector with the sector with the sec
Measuring	2.0 GHz Vertical // A trum Spectrum 2 to dayv 15 db swr 60 ms = ArgPwr w w w M	suring ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★	Descrizontal // Average for 3 G Spectrum 2 Spectrum 3 (3) Spectrum 1 dBp/ 1 5 db SWT 60 ms = VBW 3 MHz 15 db SWT 60 ms = VBW 3 MHz 10 db SWT 60 ms = VBW 3 M	Ant 3.0 GHz Horizo Bectrum Spectr If Level 105.00 dBy/ 15 dB Lount 100/100 Bm AvgPwr 0 dBy/ 0 dBy/
Measuring	2.0 GHz Vertical // A trum Spectrum 2 swel 105.00 dBµV 15 dB swr 60 ms = count 100/100 AvgBwr BµV V V V V M M M M M M M M M	suring ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★	Descrizontal // Average for 3 G Spectrum 2 Spectrum 3 (3) Spectrum 1 dBp/ 1 5 db SWT 60 ms = VBW 3 MHz 15 db SWT 60 ms = VBW 3 MHz 10 db SWT 60 ms = VBW 5 M	Image: Sector with the sector withe sector with the sector with the sector with the sec
Measuring	2.0 GHz Vertical // A trum Spectrum 2 to dayv 15 db swr 60 ms = AvgPwr w w w w w M w W M w M W M W M W M W M M W M W M W M W M	suring ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★	Descrizontal // Average for 3 G Spectrum 2 Spectrum 3 (3) Spectrum 1 dBp/ 1 5 db SWT 60 ms = VBW 3 MHz 15 db SWT 60 ms = VBW 3 MHz 10 db SWT 60 ms = VBW 5 M	Image: state
Measuring	2.0 GHz Vertical // A trum Spectrum 2 ① svol 105.00 dBuV Count 100/100 AvgPwr BuV W W Ki W Ki	suring ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★	Descrizontal // Average for 3 G Spectrum 2 Spectrum 3 (3) Spectrum 1 dBp/ 1 5 db SWT 60 ms = VBW 3 MHz 15 db SWT 60 ms = VBW 3 MHz 10 db SWT 60 ms = VBW 5 M	Image: style

Note.

1. Average test would be performed if the peak result were greater than the average limit.



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Mode:	EDR
Transfer rate:	3 Mbps(Worst case)
Distance of measurement:	3 meter
Channel:	78

- Spurious

Frequency (Mbz)	Level (dBµN)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBµN/m)	Limit (dBµN/m)	Margin (dB)
4 965.00	46.83	Peak	Н	8.18	-	55.01	74.00	18.99
4 965.00	36.93	Average	Н	8.18	-30.58	14.53	54.00	39.47
1 594.80	49.19	Peak	V	-4.81	-	44.38	74.00	29.62
4 965.00	48.64	Peak	V	8.18	-	56.82	74.00	17.18
4 965.00	37.41	Average	V	8.10	-30.58	15.01	54.00	38.99

- Band edge

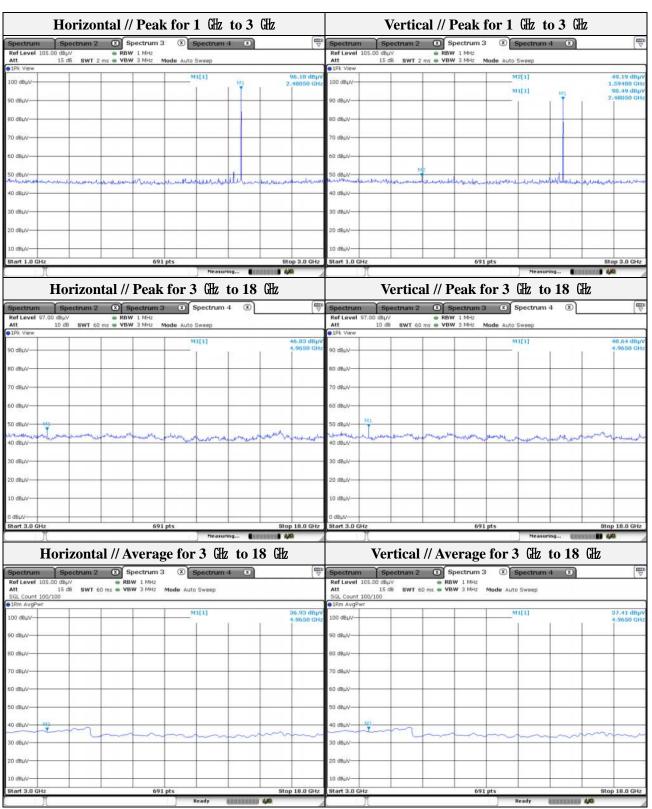
Frequency	Level	Detect mode	Ant. Pol.	CF	DCF	Field strength	Limit	Margin
(MLz)	(dBµN)		(H/V)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)
2 492.66	49.36	Peak	V	0.09	-	49.45	74.00	24.55

	Re	stricted			Res	stricted	l band //	/ Vertica	al // Pea	ık				
Spectrum	S	pectrum 2	Spectrum 3	(X) Spectrum	14 🛛	a a	Spectrur	n	Spects	rum 2 🗵	Spectrum 3	(*) Spectra	um 4 🛛 🛪	1
Ref Level 1	04.00 dB	μv	BW 1 MHz				Ref Level	104.00	dBµV		RBW 1 MHz			
Att	15	dB SWT 1 ms	WBW 3 MHz Mod	e Auto Sweep			Att		15 dB	SWT 1 ms 👄	VBW 3 MHz Mo	de Auto Sweep		
e 1Pk View				and and and and			O 1Pk View	2 · · · ·						
100 80LV				M3[1]		96.54 dBp				->		M4[1]	· · · · · · · · · · · · · · · · · · ·	49.36 dBµ
~				M1[1]		2.4797830 GF 46.63 dBu						MILLI		2.4926570 GF 45.69 dBu
90/d8µV	-	-		milii		2.4835000 GF						mil 1		2.4835000 CH
1 N				1	1	1	BE dBuV					1	1	1
FO dBuV							- ou upuv	1						
70 dBuV							D dBuV-	1						
70 deuv								1						
60 dBuV	1	-					60 dBµV-	1						
10020228							121222	1.			744		10	
50 dBµV	1 M				12		50 dBµV-	line	a parte	magnet	in a superior	march when the	- Marguer Propose	moutestus
124211664272	and a	-	when the solution	المقا الأستراسي مدهد لحري	a second particular	and the second second second second	40 dBuV-							
40 dBµV							-							
							30 dBµV	-						
30 dBuV	_													
20 dBuV							20 dBµV							
20 0000							10 d8uV-						F2	
10 dBuV					2		10 0604		1	1				
	1						Start 2.47	8 GHz			691 p	ts		Stop 2.51 GHz
Start 2.478	GHz		691 pts			Stop 2.51 GH:								
Marker							Type Re	f Trc		X-value	Y-value	Function	Fun	ction Result
Type Ref		X-value	Y-value	Function	Fun	ction Result	M1	1	-	2.4835 GHz	45.69 dBµV			
M1 M2	1	2.4835 G 2.5 G					M2 M3	1	-	2.5 GHz 2.479783 GHz	46.65 dBµV 90.76 dBµV			
M3	1	2.479783 G					M4	1		2.492657 GHz	49.36 dBuV			
	11			Measu	iring 🖬	ANALYSING AND	-	71				1000	suring	
	14					and and a second s	111	14						And the second s

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Note.

1. Average test would be performed if the peak result were greater than the average limit.

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Test results (18 GHz to 30 GHz)									
Mode:	EDR								
Transfer rate:	3 Mbps								
Distance of measurement:	3 meter								
Channel:	39(Worst case)								

	Horizontal											Ver	tical				
Spectrum	Spectrum 2	Spectrum	3 8	Spectrum 4	×		100 N	Spectrum	S	pectrum 2	x s	pectrum	3 (8)	Spectrum	4 🗷		(m)
Ref Level 97.00		BBW 1 MHz	Mode Auto	Sweep				Ref Level 6	7.00 dBµ 10 d			/ 1 MHz / 3 MHz	Mode Aut	o Sweep			
• 1Pk Max								91Pk View						converse.			
90 dBµV		-						90 dBµV				-			-		
80 dBuV								80 dBuV									
70 dBuV	-						-	70 dBuV						+		-	
60 d8µV			-					60 d8µV		-			-	-		-	
50 d8µV								50 d8µV				-					
"ad"bertantoran"	Managede Loop or a	the assist the second second	mention and	milmer	me work	- market hay	walland.	Ke'datorium	A HARRING	althought and and	an and the second	an performance	what have	- Marthan	han black	Mundal Martin	a Human
30 dBµV			-					30 dBµV		-				+			-
20 dBµV			-			-		20 dBµV			-			-			
10 dBµV		-						10 dBuV					-	-			
0 d8µV		60	01 pts			Snan	12.0 GHz	0 dBµV-	,			691	pts			Snar	12.0 GHz
)(Measurin	g	10000	No. of Concession, Name		N					Measur	ing III		No. of Concession, name

Note.

1. No spurious emission were detected above 18 GHz.



3.8 Conducted spurious emissions & band edge

lest setup		
EUT	Attenuator	Spectrum analyzer

Test procedure

ANSI C63.10-2013 - Section 7.8.6 and 7.8.8

Test setting

- 1. Span = Wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products that fall outside of the authorized band of opera tion.
- 2. Reference level: As required to keep the signal from exceeding the maximum instrument input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level.
- 3. Attenuation: Auto (at least 10 dB preferred).

 $4. \mathbf{RBW} = 100 \text{ kHz}$

- 5. VBW \geq 300 kHz
- 6. Detector = Peak
- 7. Sweep time = auto couple
- 8. Allow the trace to stabilize.

Limit

According to 15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph(b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in section 15.209(a) is not required. In addition, radiated emission which in the restricted band, as define in section 15.205(a), must also comply the radiated emission limits specified in section 15.209(a) (see section 15.205(c))

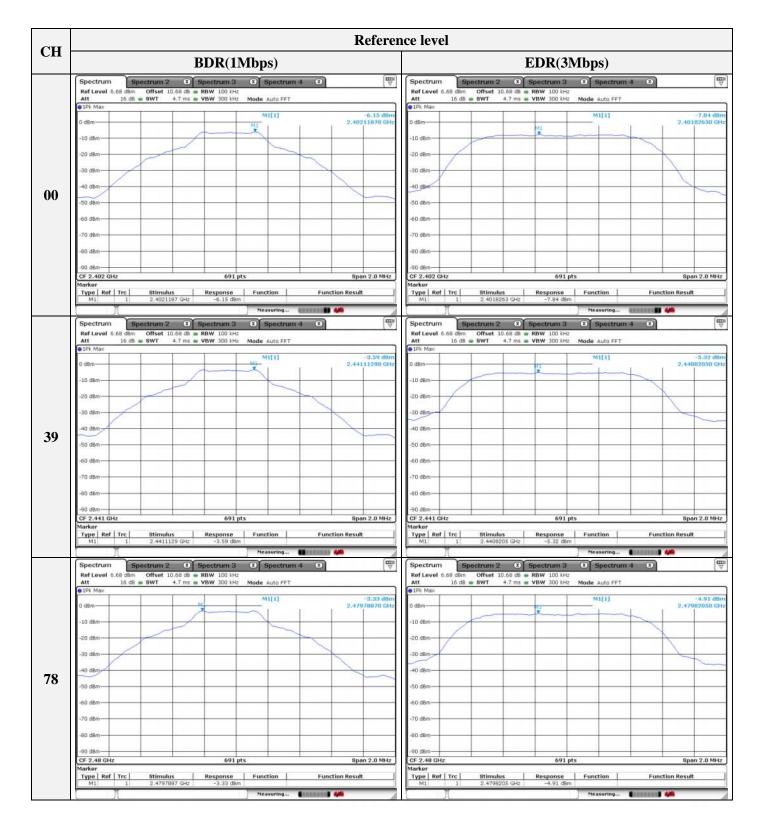
According to RSS-247 issue 2 5.5, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shal 1 be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a t ime interval, as permitted under Section 5.4(d), the attenuation required shall be 30 dB instead of 2 0 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

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Test results



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BDR(1	Mbps)
Spectrum 2 8 Spectrum 3 3 Spectrum 4 8	Spectrum 2 3 Spectrum 3 8 Spectrum 4 8
Ref Level 0.68 d9m Offset 10.68 d8 RBW 100 kHz Att 10 d8 SWT 113.8 µs WBW 300 kHz Mode Auto FFT	Ref Level 0.68 dBm Offset 10.68 dB RBW 100 kHz Att 10 dB SWT 250 ms VBW 300 kHz Mode Auto Sweep
e 1Pk Max	● 1Pk: Max
	M. M2[1] -44.60 dBm 4.8180 CHz
2.402040 \$412	-10 dBmM1[1] -6.73 dBm23970 GHz
-20 dBm 01 -26.150 dBm	-20 dBm-
-30 dBm	-30 dBm
-40 dBm-	-40 dBm
-50 dBm	T T T T T T T T T T T T T T T T T T T
Ma Ma	-50 dBm
-60 dBm	1-69 dBm / _ manufacture of a service and a service and the and the service of th
170 GBm to provide a standard and a	Not set a
-80 dBm	-80 dBm
-90 dBm-	
Start 2.3 GHz 691 pts Stop 2.405 GHz	-90 dBm
Marker	Start 30.0 MHz 691 pts Stop 25.0 GHz
Type Ref Trc Stimulus Response Function Function Result M1 1 2.40204 GHz -6.23 dBm -6.23 dBm -6.23 dBm	Marker Type Ref Trc Stimulus Response Function Function Result
M2 1 2.4 GHz -62.37 d8m	M1 1 2.397 GHz -6.73 dBm
M3 1 2.35402 GHz -57.85 dBm Measuring	M2 1 4.818 GHz -44.60 dBm
	Spectrum 2 (2) Spectrum 3 (2) Spectrum 4 (3)
	Art Level 0.68 dBm Offset 10.68 dBm
	M2[1] -37.79 dBm
	-10 dBm
	-20 dBm
	D1 -23.590 d8m
	-30 dBm
	-40 dBm
	-50 dBm-
Blank	1-50 dBm-10
	a contraction and the set war and make man man man and and
	A9,454
	-80 dBm-
	-90 dBm
	Start 30.0 MHz 691 pts 8top 25.0 GHz Marker
	Type Ref Trc Stimulus Response Function Function Result
	M1 1 2.433 GHz -4.25 dBm M2 1 4.89 GHz -37.79 dBm
	Neasuring
Spectrum Spectrum 2 (8) Spectrum 3 (8) Spectrum 4 (8)	Spectrum Spectrum 2 🛞 Spectrum 3 🛞 Spectrum 4 🛞
Ref Level 0.68 d8m Offset 10.68 d8 (m) RBW 100 kHz Att 10 d8 SWT 38 µs (m) VBW 300 kHz Mode Auto FFT	Ref Level 0.68 dBm Offset 10.68 dB RBW 100 kHz Att 10 dB SWT 250 ms VBW 300 kHz Mode Auto Sweep
1Pk Max	e 19k Max
M1 1 -3.50 d8m 2.4797830 GHz	M1 M2[1] - 37.87 dBm 4.9690 CHz
-10 d8m M2[1] -64,42 d8m 2,4835000 GHz	-10 dBm M1[1] -3.96 dBm 2,4690 CHz
-20 dBm 01 -23.330 dBm	-20 dBm 01 -23.330 dBm
-30 Bm	-30 dBm
-40]dBm-	-40 dBm
-50 dem	
/	-50 dBm
160 dBm The manufacture was hard and and and and and and and and and an	-60 dem
-70 dBm	with the man and the with the second wards
+80 dBm	.00. dbm
+90 dBm	-80 dBm-
	-90 dBm
Start 2,478 GH2 601 pts Stop 2,51 GHz Marker	Start 30.0 MHz 691 pts Stop 25.0 GHz
Type Ref Trc Stimulus Response Function Function Result	Marker
M1 1 2.479783 GHz -3.50 dBm M2 1 2.4835 GHz -64.42 dBm	Type Ref Trc Stimulus Response Function Function Result M1 1 2.469 GHz -3.96 dBm -3.96 dBm -3.96 dBm
	M2 1 4.963 GHz -37.87 dBm
M3 1 2.503957 GHz -59.71 dBm Measuring	Neasuring



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			EDR(3	Mbp	s)					
Spectrum Spectrum	2 (X) Spectrum 3 (X	Spectrum 4 💌	(E)	Spectrum	n Spectru	m 2 🗷	Spectrum 3	Spectrum	14 X	E C
	10.68 dB 👄 RBW 100 kHz					t 10.68 dB 🖷 1	RBW 100 kHz	tope group temperature		
Att 10 dB SWT	113.8 µ5 🖷 VBW 300 kHz Mo	ie Auto FFT		Att	10 dB SWT	250 ms 🖷	VBW 300 kHz	Mode Auto Sweep	D	
		M0[1]	-50.06 dBm	M				M2[1]		-45.59 dBr 4.8180 CH
10 dBm		M1[1]	2.353870 GHz -8.24 dBm	-10 dBm-				-M1[1]		-9.05 dBr
20 dBm			2,402340 64z	-20 dBm-		_	-		1	2.3970 GH
30 dBm 01 -27.840 dBm			-		01 -27.840 dām					
				-30 dBm-						
-40 dBm			1.1.0	-40 dBm-	10		+ +			
-50 dBm		_		-50 dBm-		_				
-60 dBm	X		1	1-60 dBm-					and a second	
70 dem manus	mannamen has	angonalle or land	And man promition and	Л	Jumpan	non showard	Nellidensential	enemian	Ann Ma	Winning
00 48-				20 GBM						
-90 dBm				-80 dBm		-	+ +		+ +	
90 dBm				-90 dBm		_			-	
Start 2.3 GHz	691 pts		Stop 2.405 GHz	100-050V						
larker Type Ref Trc Stim	ulus Response I	Function Fun	iction Result	Start 30.0 Marker	MHz		691 p	ts		Stop 25.0 GH
M1 1 2.	40234 GHz -8.24 dBm	-unction Pur	iction Result	Type Re	f Trc Sti	mulus	Response	Function	Function	Result
M2 1 M3 1 2.	2.4 GHz -63.29 dBm 35397 GHz -58.86 dBm			M1 M2	1	2.397 GHz 4.818 GHz	-9.05 dBn -45.59 dBn	1 X		
1. I		Measuring	-		π			Measuring	Conserved 👐	
				Spectrum	n Spectru	m 2 🗷	Spectrum 3	Spectrum	14 X	a a a a a a a a a a a a a a a a a a a
						t 10.68 dB 🖷	RBW 100 kHz VBW 300 kHz		3	
				Att	10 dB SWT	250 ms 🖷	ARM 300 KHS	Mode Auto Sweep	2	
				M				M2[1]		-40,60 dB 4,8900 CI
				-10 dBm-			+ +	[1] M1[1]		-6.59 dB
				-20 dBm-		_		-	1 1	2.4330 G
				20.484	01 -25.320 dBm-					
				~30 dBm	M2					
				-40 dBm-	1		-		+ +	
	D11			-\$0 dBm-		_				
	Blank			1-60 d8m-						
					Henrichten	and on historia	- weinever to	Membride Contractions	were water water	www. deter Marine
				20 SBW						
				-80 dBm		-				
				-90 dBm		_	-		-	
				Start 30.0 Marker	MHZ	72	691 p	its		Stop 25.0 GHz
				Type Re	f Trc Sti	mulus	Response	Function	Function	Result
				M1 M2	1	2.433 GHz 4.89 GHz	-6.59 dBn -40.60 dBn	x		
					Л			Measuring	annan 🖬 🚧	
Spectrum Spectrum		Spectrum 4 🛞	EEDi	Spectrun			Spectrum 3	Spectrum	14 X	E T
Ref Level 0.68 d8m Offset Att 10 d8 SWT	10.68 dB • RBW 100 kHz 38 µs • VBW 300 kHz Mor	ie Auto FFT		Ref Level Att	0.68 dBm Offsi 10 dB SWT	250 ms	RBW 100 kHz VBW 300 kHz	Mode Auto Sweep		
1Pk Maor				e 1Pk Max						
ZNI		M3[1]	-61.44 dBm 2.5040490 GHz	1				M2[1]		-40.78 dB/ 4.9630 GH
10 dBm		M1[1]	-5,61 dBm 2,4796900 GHz	-10 dBm-				-M1[1]		-6.35 dBi 2.4690 GH
20 dBm				-20 dBm	-			1	1	-
30 dBm				-30 dBm-	01 -24.910 dBm	-				
40 dBm			-	-40 dbm-	MP					
50 dBm				-40 dBm						
			M3	-50 dBm-						_
60 dBm		and the second second second	The second secon	-60 dBm	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	any a large	Contraction of	have and the times	mount	marcher
70 dBm	- marine and the second second	munum	March umber	Jo den	habriantering	- Collempinen	when	Angelowe		
80 dBm										
90 dBm				-80 dBm						
A 3 30 10				-90 dBm			+ +		+ +	
Start 2.478 GHz	691 pts		Stop 2.51 GHz	Start 30.0	MHZ		691 p			Stop 25.0 GH
tarker	ulus Response I	Function Fun	nction Result	Marker	Purt2		041	11 ST 5441 - 11		10 2012
Type ker inc stim				Type Re	f Trc Sti	mulus	Response	Function	Function	Result
M1 1 2.				M1	1	2.469 GHz		1		
M1 1 2. M2 1 2	47969 GH2 -5.51 08m -4835 GH2 -65.41 08m 04049 GH2 -61.44 08m			M1 M2	1	2.469 GHz 4.963 GHz	-6.35 dBn -40.78 dBn	Neasuring		



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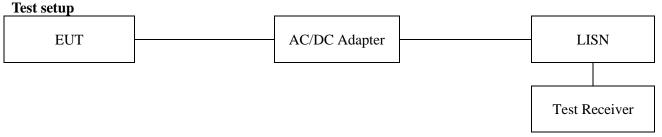
Spectrum	Spectrum 2	8						Emi ▽	Spect	rum	SI SI	ectrum 2	×						(E)
RefLevel 0.68 d Att 10	Bm Offset 10 dB SWT 13	68 dB 🖷 RB			uto FFT				Ref Le	vel 5	.68 dBm 15 dB			RBW 100 kHz VBW 300 kHz	Mode Au	to FFT			
1Pk View									e 1Pk V	iew		Liso.co							
10 dBm	_				11(1)		MUTH	-54.40 dBm 43400 000 r 44.00 000 r 14.00 000 r	0'08m-	A					M3 M1			2.46	-51.39 dB 838970 GF -3.14 dB 769590 GF
20 dBm 01 -2- 30 dBm	.920 dB/h								Lo Ver	0	1 -23.14	0 dBm							
40 dBm						MD			-30 dBr -40 dBr		L	Max							
	um whithin	MMMMM	NNNNN		WWW	MMMM	HNN -		-50 dBr			athan	unni	when	nn	AAA	har	AAA	w
30 dBm									-70 dBr										
90 dBm			691	at a				2.42 GHz	-90 dBr		-			691 p					p 2.51 GH
arker			091	prs			stop	12.42 GHz	Marker		anz			091 p	6			acu	72.31 614
Type Ref Trc M1 M2 M3	1	s 18 18 GHz 14 GHz 93 GHz	Response -4.92 dB -54.36 dB -54.43 dB	m	tion	Funct	tion Result	t	Type M1 M2 M3	Ref	Trc 1 1	Stimulu 2.4769 2.48 2.4838	IS9 GHz I35 GHz	Response -3.14 dBm -50.62 dBm -51.39 dBm	ř.	ion	Fun	ction Result	t

					Норр	ping mo	de_E	DR	R(3M	(bps)						
Spectrun) T	Spectrum 2 🛞	1				Spe	ctrum	s	pectrum 2	×					E ₩
Ref Level	0.68 dB/			Mode Auto FFT			Ref	Level	5.69 dBm 15 dB			RBW 100 kHz VBW 300 kHz	Mode Auto FFT			
1Pk View	10.9	e awri 236.7 µs w	1014 300 676	MODE AUTO PPT				View	4.0 50		7.9 µs	TON JOU ML	Mode Auto PPT			-
+10 dBm				M3[1] M1[1]		-54.55	Ettr 0 del	4 44	4				M1[1] M2[1]		-3.3- 2.477796 -58.9 2.483500	58 GHa
-20 dBm-	01 -254	150 dBm		_	+ +		-20 d		1 -23.34	5 dBm				-		
-40 dBm							~30 d									
-50 dBm					MD	M	-40 0		1			100				
APP PONT	W W	the work of the second	Alland pana	har the strategy and the state of the state	announder	(P4)	-50 0		1	Mangulan N	1 mandar	montin	whent	The Mary Mary	an manue	4/4
-70 dBm							-70 d	IBm-						-		
-80 dBm-							-80 d	Bm			-	-		-		_
							-90 d	Bm		-	-					
Start 2.3 0	Hz		691 pt		- in in	Stop 2.42 0		1 2.476	GHz	· · · ·	· ·	691 pt	\$	-	Stop 2.51	L GHz
Marker Type Re M1 M2 M3	f Trc 1 1 1	Stimulus 2.41991 GHz 2.4 GHz 2.39195 GHz	Response -5.05 dBm -55.59 dBm -54.35 dBm	Function	Functi	ion Result	Mark Typ	e Ref 11 12	1 1 1	Stimulu 2.4771 2.46 2.4010	196 GHz 835 GHz	Response -3.34 dBm -58.97 dBm -54.07 dBm	Function	Fun	tion Result	
	1			Measuring	COLUMN TO A	1		10.1	N				Neasuring	RATERIA	446	



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3.9. AC conducted emissions



Limit

According to 15.207(a), for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50uH/50 ohm line impedance stabilization network (LISN). Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequencies ranges.

Engineer of Emission (Mg)	Conducted li	mit (dBµN/m)
Frequency of Emission (Mb)	Quasi-peak	Average
0.15 - 0.50	66 - 56*	56 - 46*
0.50 - 5.00	56	46
5.00 - 30.0	60	50

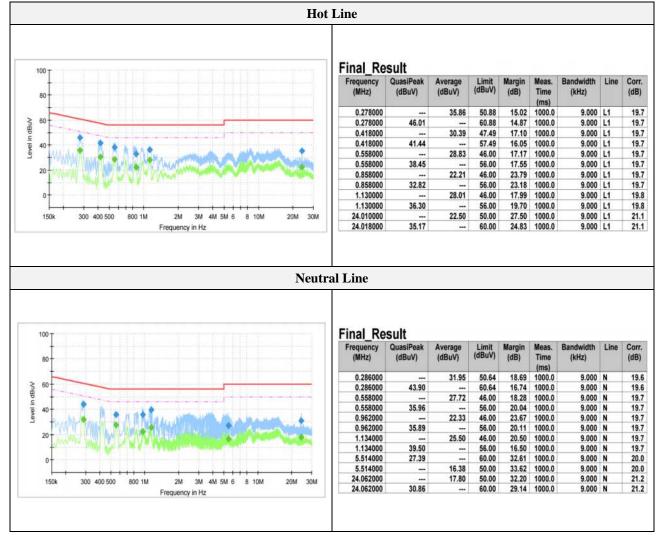
Note:

- 1. All AC line conducted spurious emission are measured with a receiver connected to a grounded LISN while the EUT is operating at its maximum duty cycle, at maximum power, and the appropriate frequencies. All data rates and modes were investigated for conducted spurious emission. Only the conducted emissions of the configuration that produced the worst case emissions are reported in this section.
- 3. Both Cable loss and LISN factor are included in measurement level(QP Level or AV Level).



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Equipment	Manufacturer	Model	Serial No.	Calibration interval	Calibration due.
Spectrum Analyzer	R&S	FSV40	101002	1 year	2020.06.24
8360B Series Swept Signal Generator	HP	83630B	3844A00786	1 year	2021.01.15
DC Power Supply	Agilent	6632B	US36351824	1 year	2021.01.14
Power Meter	Anritsu	ML2495A	1438001	1 year	2021.01.14
Pulse Power Sensor	Anritsu	MA2411B	1339205	1 year	2021.01.14
Attenuator	KEYSIGHT	8493C	82506	1 year	2021.01.14
Loop Antenna	Schwarzbeck	FMZB1513	225	2 years	2021.02.15
Trilog-broadband antenna	SCHWARZBECK	VULB 9163	715	2 years	2020.09.20
Horn Antenna	A.H	SAS-571	414	2 years	2021.02.11
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA 9170550	2 years	2021.02.19
Preamplifier	R&S	SCU01	100603	1 year	2020.11.25
Preamplifier	AGILENT	8449B	3008A01742	1 year	2021.01.02
EMI Test Receiver	R&S	ESU26	100551	1 year	2021.04.01
EMI TEST RECEIVER	R & S	ESR3	101781	1 year	2021.01.10
PULSE LIMITER	R & S	ESH3-Z2	101915	1 year	2021.01.02

Appendix A. Measurement equipment

Peripheral devices

Device	Manufacturer	Model No.	Serial No.
Notebook computer LG Electronics Inc.,		LGS53	306QCZP560949