T E S T R E P O R T
No.: 16-1-0190801T05a

According to:
FCC Regulations
Part 1.1310 , Part 2.1091

for

Intel Corporation

RCM24G Radio Control Module 2.4 GHz
+
PRESTTA Antenna + Intel FA5 Antenna Ports 1 & 5

FCC-ID: 2AJ2A-RCM24G

Laboratory Accreditation and Listings			
DAkkS Deutsche Akkreditierungsstelle D-PL-12047-01-01	MRA US-EU 0003	Industry Canada Reg. No.: 3462D-1 Reg. No.: 3462D-2 Reg. No.: 3462D-3	Voluntary Controls for Electromagnetic Emissions Reg. No.: R-2666 C-2914, T-1967, G-301
Wi Fi ALLIANCE AUTHORIZED RF LABORATORY	ctia Authorized™ Test Lab Lab Code: 20011130-00		
accredited according to DIN EN ISO/IEC 17025			

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1. Summary of test results

The test results apply exclusively to the test samples as presented in this Report. The CETECOM GmbH does not assume responsibility for any conclusions and generalizations taken in conjunction with other specimens or samples of the type of the item presented to tests.
Following tests have been performed to show compliance with applicable FCC Part 2.1091 and FCC Part 1.1310 of the FCC CFR 47 Rules.

The presented Equipment Under Test (in this report, hereinafter referred as EUT) integrates a Proprietary 2.4 GHz RF Transceiver (Hopping Mode). Other implemented wireless technologies were not considered within this test report.

1.1 Summary of tests results

RF-Exposure Evaluation (separation distance user to RF-radiating element greater 20cm)						
Test cases	**Port**	**References & Limits**		**EUT set-up**	**EUT op. mode**	**Result**
		FCC Standard	Test Limit			
Radio frequency radiation exposure Requirements	Cabinet + Inter-Connecting Cables (conducted)	§2.1091 §2.1093	RF-Field Strength Limits: FCC: "general population/ uncontrolled" environment	1	1	Pass

Digital unterschrieben von Rachid Acharkaoui
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Datum: 2017.04.25 16:24:49 +02'00'

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Dipl.-Ing. Rachid Acharkaoui
Responsible for test section

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Date: 2017.04.25 16:01:55 +02'00'

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B.Eng. M. Nunier
Responsible for test report

1.2 Summary of product description

FCC ID:	2AJ2A-RCM24G	
Product name	RCM24G	
Exposure category	☒ General population/uncontrolled environment ☐ Occupational exposure/controlled environment	
Output power	☒ Conducted ☐ ERP ☐ EIRP ☐ Peak ☒ Source-based time-averaging	
Antenna gain	details refer Chapter 1.5	
Technology	☐ MIMO	☐ 2T2R ☐ 3T3R ☐ 4T4R
	☒ non-MIMO	☒ 1T1R ☐ 1T2R ☐ 2T1R
Evaluation type	☒ Standalone ☐ Simultaneous transmission	
Evaluation distance	☒ 20 cm	
	☐ XXX cm	declares by manufacturer
EUT type	☒ Production Unit ☐ Engineering Unit	
Device type	☒ Mobile device ☐ Fixed device	
Refer rules	☒ CFR 47 FCC Part 2.1091 ☒ CFR 47 FCC Part 1.1310 ☒ KDB 447497 D01v06 October 23, 2015 ☒ KDB 865664 D01v01r02 October 23, 2015	

1.3 Refer Rules

ANSI C95.1–1999	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
KDB 447498 D01 v06 October 23, 2015	Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.
KDB 865664 D01v01r02 October 23, 2015	RF Exposure Compliance Reporting and Documentation Considerations.
CFR 47 FCC Part 2.1091	Radiofrequency radiation exposure evaluation: mobile devices.
CFR 47 FCC Part 1.1310	Radiofrequency radiation exposure limits.

1.4 EUT Technologies

Wireless Technologies	Frequency bands	Operation mode			Duty cycle
☐GSM	☐850 ☐1900	Voice (GMSK)	1 slot		☐12.5%
	☐Support DTM (Dual Transfer Mode)				
☐GPRS	☐850 ☐1900	GPRS (GMSK) Multi – Slot Class	☐ 8	1 slot (1 Up, 4 Down)	☐12.5%
			☐ 10	2 slots (2 Up, 4 Down)	☐12.5% ☐ 25%
			☐ 12	4 slots (4 Up, 4 Down)	☐12.5% ☐ 25% ☐37.5% ☐ 50%
☐EDGE	☐850 ☐1900	EDGE (8-PSK) Multi – Slot Class	☐ 8	1 slot (1 Up, 4 Down)	☐12.5%
			☐ 10	2 slots (2 Up, 4 Down)	☐12.5% ☐ 25%
			☐ 12	4 slots (4 Up, 4 Down)	☐12.5% ☐ 25%

					☐37.5% ☐ 50%
☐WCDMA (UMTS)	☐Band II ☐Band IV ☐Band V	☐ UMTS Rel.99 (Voice & Data) ☐ HSDPA(Rel.5) ☐ HSUPA(Rel.6) ☐ DC-HSDPA(Rel.8) ☐ HSPA+(Rel.7)			☐100%
☐CDMA (CDMA2000)	☐BC0 ☐BC1 ☐BC10	☐ 1xRTT (Voice & Data) ☐ 1xEVDO Rel.0 ☐ 1xEVDO Rel.A ☐ 1xAdvanced			☐100%
	☐Support SV-DO (1xRTT-1xEVDO)				
☐LTE-FDD	☐Band 2 ☐Band 4 ☐Band 5 ☐Band 7 ☐Band 12 ☐Band 13 ☐Band 17 ☐Band 25 ☐Band 26 ☐Band 27 ☐Band 30	☐QPSK ☐16QAM			100%
		☐Rel.11 Carrier Aggregation	☐2 Uplinks 2 Downlinks ☐2 Uplinks 3 Downlinks ☐3 Uplinks 2 Downlinks ☐3 Uplinks 3 Downlinks		
	☐Supports SV-LTE (1xRTT-LTE)				
☐LTE-TDD	☐Band 38 ☐Band 39 ☐Band 40 ☐Band 41 ☐Band 42	☐QPSK ☐16QAM			63.3% This device supports uplink –downlink configuration 0-6. The configuration with highest duty cycle was used (configuration. 0 at 63.3%)
		☐ Rel.11 Carrier Aggregation	☐2 Uplinks 2 Downlinks ☐2 Uplinks 3 Downlinks ☐3 Uplinks 2 Downlinks ☐3 Uplinks 3 Downlinks		
	☐Supports SV-LTE (1xRTT-LTE)				
☐Wi-Fi	☐2.4GHz	☐IEEE 802.11b	☐2412 – 2462 MHz ☐2412 – 2472 MHz		☐100%
		☐IEEE 802.11g	☐2412 – 2462 MHz ☐2412 – 2472 MHz		☐100%
		☐ IEEE 802.11n HT20	☐2412 – 2462 MHz ☐2412 – 2472 MHz		☐100%
		☐ IEEE 802.11n HT40	☐2422 – 2452 MHz		☐100%
	☐5GHz	☐IEEE 802.11a	☐5180 – 5240 MHz ☐5260 – 5320 MHz ☐5500 – 5700 MHz ☐5745 – 5825 MHz		☐100%
		☐ IEEE 802.11n HT20	☐5180 – 5240 MHz ☐5260 – 5320 MHz ☐5500 – 5700 MHz ☐5745 – 5825 MHz		☐100%
		☐ IEEE 802.11n HT40	☐5190 – 5230 MHz ☐5270 – 5310 MHz ☐5510 – 5670 MHz ☐5755 – 5795 MHz		☐100%
		☐IEEE 802.11ac VHT20	☐5180 – 5240 MHz ☐5260 – 5320 MHz ☐5500 – 5700 MHz ☐5745 – 5825 MHz		☐100%

		☐IEEE 802.11ac VHT40	☐5190 – 5230 MHz ☐5270 – 5310 MHz ☐5510 – 5670 MHz ☐5755 – 5795 MHz	☐100%
		☐IEEE 802.11ac VHT80	☐5210 – 5210 MHz ☐5290 – 5290 MHz ☐5530 – 5530 MHz ☐5775 – 5775 MHz	☐100%
	☐Supports Band gap channels			
☒Others	☒2.4GHz	☒ 1 MHz Bandwidth	☒2402 – 2472 MHz	☒100%
☐Bluetooth	☐2.4GHz	☐Version 2.1+EDR		☐77.5%
		☐Version 3.0+HS		☐77.5%
		☐Version 4.0		☐100%
		☐Version 4.1+EDR		☐77.5%
		☐Version 4.2+EDR		☐77.5%

1.5 Antenna Information

Wireless Technologies	Frequency bands	Antenna type	Maximum antenna gain	
☐GSM	☐850	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
☐GSM	☐1900	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
☐WCDMA (UMTS)	☐Band II	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
	☐Band IV	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
	☐Band V	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
☐CDMA (CDMA2000)	☐CDMA800	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
	☐CDMA1900	☐PIFA ☐PCB ☐	☐Antenna 0	

		☐PIFA ☐PCB ☐	☐Antenna 1	
☐LTE-FDD	☐Band 2	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
	☐Band 4	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
	☐Band 5	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
	☐Band 7	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
	☐Band 12	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
	☐Band 13	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
	☐Band 17	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
	☐Band 25	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
	☐Band 26	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
	☐Band 27	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA	☐Antenna 1	

		☐PCB ☐		
☐LTE-TDD	☐Band 38	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
	☐Band 39	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
	☐Band 40	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
	☐Band 41	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
	☐Band 42	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
☐Wi-Fi	☐2.4GHz	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
		☐PIFA ☐PCB ☐	☐Antenna 2	
	☐5GHz	☐PIFA ☐PCB ☐	☐Antenna 0	
		☐PIFA ☐PCB ☐	☐Antenna 1	
		☐PIFA ☐PCB ☐	☐Antenna 2	
☒Others	☒2.4GHz	☐PIFA ☐PCB ☒ PRESTTA	☒Antenna 0	2390 – 2490 MHz: 2.5dBi
		☐PIFA ☐PCB ☒ Intel FA5 Port 1	☒Antenna 1	2400 – 2500 MHz: 3.19dBi
		☐PIFA ☐PCB ☒ Intel FA5 Port 5	☒Antenna 2	2400 – 2500 MHz: 4.86dBi
☐Bluetooth	☐2.4GHz	☐PIFA ☐PCB	☐Antenna 0	

		☐		

1.6 Description of EUT

Short description*)	EUT	Type	S/N serial number	HW hardware status	SW software status
EUT A	xxxRCM24G	Radio Control Module 2.4GHz	PCB ID 3526	D	RCM24G_120 17USCN Bootloader Version3.6
EUT B	PRESTTA Antenna	PRESTTA WLAN Embedded Antenna-1000418	N/A	Antenna Cable Length : 20 cm	--
EUT C	xxxRCM24G	Radio Control Module 2.4GHz	PCB ID 3518	D	RCM24G_120 17USCN Bootloader Version3.6
EUT D	Intel FA5 Antenna	Monopole Antenna Port 1 Monopole Antenna Port 5	N/A	Antenna-002 Antenna Cable Length : 40 cm	--

*) EUT short description is used to simplify the identification of the EUT in this test report.

1.7 Auxiliary Equipment (AE)

AE short description *)	Auxiliary Equipment	Type	S/N serial number	HW hardware status	SW software status
AE 1	Test Tablet	Inari 8.3” AAVmobile	--	Intel® Atom™ CPU Z3795 RAM: 4 GB Full Touch Support	Windows Embedded 8.1 Industry Pro 64 bit + RCM24G TestTool_V3_70Channels Software
AE 2	Programming USB Cable	AscTec USB	4716	WMD	--

*) AE short description is used to simplify the identification of the auxiliary equipment in this test report.

1.8 EUT Set-ups

EUT set-up no.*)	Combination of EUT and AE	Description
set. 1	EUT A + EUT B + Cable 6 + (AE 1 +AE2) [AE 1 + AE 2: were only used to activate test mode & kept outside test chamber]	**RCM24G + PRESTTA Antenna Radiated Measurements**
set. 2	EUT C + EUT D + Cable 1 + Cable 2 + Cable 3 + Cable 4 + Cable 5 + (AE 1 + AE 2) [AE 1 + AE 2 : were only used to activate test mode & kept outside test chamber] [Unused 5 GHz Ports of EUT D were terminated with 50 Ω terminations]	**RCM24G + Intel FA5 Antenna Port 1 Radiated Measurements**
set. 3	EUT C + EUT D + Cable 1 + Cable 2 + Cable 3 + Cable 4 + Cable 5 + (AE 1 + AE 2) [AE 1 + AE 2 : were only used to activate test mode & kept outside test chamber] [Unused 5 GHz Ports of EUT D were terminated with 50 Ω terminations]	**RCM24G + Intel FA5 Antenna Port 5 Radiated Measurements**
set. 4	EUT A + Cable 7 + (AE 1 + AE 2) [AE 1 + AE 2 : were only used to activate test mode]	**RCM24G Conducted Measurements**

*) EUT set-up no. is used to simplify the identification of the EUT set-up in this test report.

1.9 Configuration of cables used for testing

Cable number	Item	Connections	Cable length
Cable 1	MCX to uUFL Cable	Intel FA5 Antenna Test Port to RCM24G	40 cm
Cable 2	MCX to SMA Cable	Intel FA5 Antenna unused port to 50 Ω termination	40 cm
Cable 3	MCX to SMA Cable	Intel FA5 Antenna to 50 Ω termination	40 cm
Cable 4	MCX to SMA Cable	Intel FA5 Antenna to 50 Ω termination	40 cm
Cable 5	MCX to SMA Cable	Intel FA5 Antenna to 50 Ω termination	40 cm
Cable 6	uUFL to uUFL Cable	PRESTTA Antenna to RCM24G	20 cm
Cable 7	uUFL to SMA Cable	RCM24G to Spectrum Analyzer	10 cm

2 Administrative Data

2.1 Identification of the testing laboratory

Company name:	CETECOM GmbH
Address:	Im Teelbruch 116 45219 Essen - Kettwig Germany
Responsible for testing laboratory:	Dipl.-Ing. Rachid Acharkaoui
Deputy:	Dipl.-Ing. Niels Jeß

2.2 Test location

2.2.1Test laboratory "CTC"

Company name:	see chapter 2.1 Identification of the testing laboratory

2.3 Organizational items

Responsible for test report:	B.Eng. Martin Nunier
Project leader:	M.Sc. Ajit Phadtare
Receipt of EUT:	2017-01-12
Date(s) of test:	2017-02-01 to 2017-03-17
Date of report:	2017-04-25
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Version of template: 13.02	

Remark 1: based on applicants tune-up info

2.4 Applicant's details

Applicant's name:	Intel Corporation
Address:	2200 Mission College Boulevard Santa Clara, CA 95054 USA
Contact person:	+1 408-765-8080

2.5 Manufacturer's details

Manufacturer's name:	Intel Deutschland GmbH
Address:	Konrad-Zuse-Bogen 4, 82152 Krailling, GERMANY

3 Measurements

3.1.Test location

test location	☒ CETECOM Essen	☐	☐
	For Evaluation instruments are not needed. Results are determined by calculation based on applicants delivered Tune-Up procedure.		

3.2 Evaluation Rules

Systems operating under the provisions of FCC 47 CFR section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.
In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.
In accordance with KDB447498D01 for Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modelled or measured field strengths or power density, is ≤ 1.0. The MPE ratio of each antenna is determined at the minimum test separation distance required by the operating configurations and exposure conditions of the host device, according to the ratio of field strengths or power density to MPE limit, at the test frequency. Either the maximum peak or spatially averaged results from measurements or numerical simulations may be used to determine the MPE ratios. Spatial averaging does not apply when MPE is estimated using simple calculations based on far-field plane-wave equivalent conditions. The antenna installation and operating requirements for the host device must meet the minimum test separation distances required by all antennas, in both standalone and simultaneous transmission operations, to satisfy compliance.

3.3 Limits

Table 1: LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

(A) Limits for Occupational/Controlled Exposure				
Frequency range [MHz)	Electric field strength [V/m]	Magnetic field strength [A/m]	Power density [mW/cm²]	Averaging time [minutes]
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f²)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--		6
1500-100,000	--	--		6
(B) Limits for General Population/Uncontrolled Exposure				
Frequency range [MHz)	Electric field strength [V/m]	Magnetic field strength [A/m]	Power density [mW/cm²]	Averaging time [minutes]
0.3-3.0	614	1.63	*(100)	30
3.0-30	824/f	2.19/f	*(180/f²)	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f=frequency in MHz
*Plane-wave equivalent power density

NOTE1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure. These limits apply to amateur station licensees and members of their immediate household as discussed in the text.

NOTE2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure. As discussed in the text, these limits apply to neighbours living near amateur radio stations.

3.4 MPE Calculation method

Predication of MPE limit at a given distance
Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{EIRP}{4\pi R^2} = \frac{P * G}{4\pi R^2}$$

$$G_{NUMERIC} = \frac{S * 4\pi R^2}{P}$$

Where: S=power density
P=power input to antenna
G=power gain of the antenna in the direction of interest relative to an isotropic radiator
R=distance to the centre of radiation of the antenna

3.5 Conducted Output Power

Modulation: MSK / Data Rate: 50 Kbps			
Frequency (MHz)	2402.5	2436.5	2471.5
Average Conducted Power (dBm)	10.19	19.93	9.32
Modulation: MSK / Data Rate: 100 Kbps			
Frequency (MHz)	2402.5	2436.5	2471.5
Average Conducted Power (dBm)	10.20	19.89	9.39
Modulation: MSK / Data Rate: 250 Kbps			
Frequency (MHz)	2402.5	2436.5	2471.5
Average Conducted Power (dBm)	10.19	19.78	9.40
Modulation: MSK / Data Rate: 500 Kbps			
Frequency (MHz)	2402.5	2436.5	2471.5
Average Conducted Power (dBm)	10.26	19.92	9.42

3.6 Evaluation Method

3.6.1 Standalone

Valid for GSM/GPRS/EDGE mode:

• The power was tested on 3 frequencies (lowest/middle/highest) within each operable bands and the results compared to applicant's declared power values (tune-up info).
• Average burst power (slot power) and burst average values were measured;
• Measured burst average power at all TX slots possible for this device and calculated as worst-case
• A duty-cycle correction factor of 10*log10 (max. number of possible active slots / 8 slots) were applied

Please find in the following tables the calculations based on applicants tune-up information for the power values. Also the maximum admissible allowed antenna gain is calculated which is not exceeding the MPE limit for fixed and mobile operations.

Valid for W-CDMA/LTE Mode:

• The power was checked on 3 frequencies (lowest/middle/highest) within each operable FDD-band and the results compared to applicant's declared power values (tune-up info).
• No duty-cycle correction factor is applicable

Please find in the following tables the calculations based on applicants tune-up information for the power values. Also the maximum admissible allowed antenna gain is calculated which is not exceeding the MPE limit for fixed and mobile operations.

Valid for WLAN/BT Mode:
• The average power was checked on 3 frequencies (lowest/middle/highest) within each operable WiFi band and the results compared to applicant's declared power values (tune-up info). A RMS detector was used.
• No duty-cycle correction factor is applicable
Please find in the following tables the calculations based on applicants tune-up information for the power values.

Wireless Technologies	Output power*		Antenna Gain (dBi)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)	Verdict
	dBm	mW					
Modulation: MSK / Data Rate: 50 Kbps	20.93	123.8797	4.86	100%	0.0755	1.0000	Pass
Modulation: MSK / Data Rate: 100 Kbps	20.89	122.7439	4.86	100%	0.0748	1.0000	Pass
Modulation: MSK / Data Rate: 250 Kbps	20.78	119.6741	4.86	100%	0.0729	1.0000	Pass
Modulation: MSK / Data Rate: 500 Kbps	20.92	123.5947	4.86	100%	0.0753	1.0000	Pass

Remark:
1. Output power (Average) including tune-up tolerance;
2. Output power was adjust to duty cycle at 100% if measured duty cycle less than 98%;
3. MPE evaluate distance is 20cm from user manual provide by manufacturer;
4. Depending on output power and antenna gain only the worst case is reported;

3.6.2 Simultaneous Transmission MPE

According to KDB447498 for Transmitters used in mobile exposure conditions for simultaneous transmission operations;
$\sum$ of MPE ratios ≤ 1.0

RCM24G use only one transmitter antenna, no need consider simultaneous transmission.

3.7 Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

4 Measurement uncertainties

The reported uncertainties are calculated based on the standard uncertainty multiplied with the appropriate coverage factor **k**, such that a confidence level of approximately 95% is achieved.
For uncertainty determination, each component used in the concrete measurement set-up was taken in account and it's contribution to the overall uncertainty according it's statistical distribution calculated.

Following table shows expectable uncertainties for each measurement type performed.

RF-Measurement	Reference	Frequency range	Calculated uncertainty based on a confidence level of 95%						Remarks
Conducted emissions (U_{CISPR})	CISPR 16-2-1	9 kHz - 150 kHz 150 kHz - 30 MHz	4.0 dB 3.6 dB						-
Radiated emissions Enclosure	CISPR 16-2-3	30 MHz - 1 GHz 1 GHz - 18 GHz	4.2 dB 5.1 dB						E-Field
Disturbance power	CISPR 16-2-2	30 MHz - 300 MHz	-						-
Power Output radiated	-	30 MHz - 4 GHz	3.17 dB						Substitution method
Power Output conducted	-	Set-up No.	Cel-C1	Cel-C2	BT1	W1	W2		
		9 kHz - 12.75 GHz	N/A	0.60	--	--	--		-
		12.75 - 26.5GHz	N/A	0.82	--	--	--		
Conducted emissions on RF-port	-	9 kHz - 2.8 GHz	0.70	N/A	--	--	--		N/A - not applicable
		2.8 GHz - 12.75GHz	1.48	N/A	--	--	--		
		12.75 GHz - 18GHz	1.81	N/A	--	--	--		
		18 GHz - 26.5GHz	1.83	N/A	--	--	--		
Occupied bandwidth	-	9 kHz - 4 GHz	0.1272 ppm (Delta Marker)						Frequency error
			1.0 dB						Power
Emission bandwidth	-	9 kHz - 4 GHz	0.1272 ppm (Delta Marker)						Frequency error
	-		See above: 0.70 dB						Power
Frequency stability	-	9 kHz - 20 GHz	0.0636 ppm						-
Radiated emissions Enclosure	-	150 kHz - 30 MHz 30 MHz - 1 GHz 1 GHz - 20 GHz	5.0 dB 4.2 dB 3.17 dB						Magnetic field E-field Substitution

Table: measurement uncertainties, valid for conducted/radiated measurements

5 Abbreviations used in this report

The abbreviations	
ANSI	American National Standards Institute
AV, AVG, CAV	Average detector
EIRP	Equivalent isotropically radiated power, determined within a separate measurement
EUT	Equipment Under Test
FCC	Federal Communications Commission, USA
n.a.	not applicable
Op-Mode	Operating mode of the equipment
PK	Peak
RBW	resolution bandwidth
RF	Radio frequency
RSS	Radio Standards Specification, Documents from Industry Canada
Rx	Receiver
TCH	Traffic channel
Tx	Transmitter
QP	Quasi peak detector
VBW	Video bandwidth
ERP	Effective radiated power

6 Accreditation details of CETECOM's laboratories and test sites

Ref.-No.	Accreditation Certificate	Valid for laboratory area or test site	Accreditation Body
-	D-PL-12047-01-01	All laboratories and test sites of CETECOM GmbH, Essen	DAkkS, Deutsche Akkreditierungsstelle GmbH
337 487 558 348 348	MRA US-EU 0003	Radiated Measurements 30 MHz to 1 GHz, 3 m / 10 m (OATS) Radiated Measurements 30 MHz to 1 GHz, 3 m (SAR) Radiated Measurements above 1 GHz, 3 m (FAR) Mains Ports Conducted Interference Measurements Telecommunication Ports Conducted Interference Measurem.	FCC, Federal Communications Commission Laboratory Division, USA
337 487 550 558	3462D-1 3462D-2 3462D-2 3462D-3	Radiated Measurements 30 MHz to 1 GHz, 3 m / 10 m (OATS) Radiated Measurements 30 MHz to 1 GHz, 3 m (SAR) Radiated Measurements 1 GHz to 6 GHz, 3 m (SAR) Radiated Measurements above 1 GHz, 3 m (FAR)	IC, Industry Canada Certification and Engineering Bureau
487 550 348 348	R-2666 G-301 C-2914 T-1967	Radiated Measurements 30 MHz to 1 GHz, 3 m (SAR) Radiated Measurements 1 GHz to 6 GHz, 3 m (SAR) Mains Ports Conducted Interference Measurements Telecommunication Ports Conducted Interference Measurem.	VCCI, Voluntary Control Council for Interference by Information Technology Equipment, Japan
OATS = Open Area Test Site, SAR = Semi Anechoic Room, FAR = Fully Anechoic Room			

7 Test report version

Version	Applied changes	Date of release
--	Initial release	2017-04-25
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