CE RADIO TEST REPORT

Applicant	:	MtM+ Technology Corporation
Address	:	8F, 178, MinQuan East Road, Section 3, Taipei 10542, Taiwan
Equipment	:	M905
Model No.	:	nRF52832
Trade Name	:	MtM+ Technology

I HEREBY CERTIFY THAT :

The sample was received on Nov. 08, 2017 and the testing was carried out on Nov. 08, 2017 at Cerpass Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of Cerpass Technology Corp., the test report shall not be reproduced except in full.

Approved by:

Mark Liao / Assistant Manager

Tested by:

Spree Yei / Engineer

Laboratory Accreditation:

☒ Cerpass Technology Corporation Test Laboratory

TAF Testing Laboratory 1439

Contents

History of this test report

Report No.	Issue Date	Description
TEEK1709052	Nov. 13, 2017	Original

1. Summary of Test Procedure and Test Results

1.1 Applicable Standards

The measurements shown in this test report were made in accordance with the procedures given in EUROPEAN COUNCIL DIRECTIVE 2014/53/EU.

EN 300 328 V2.1.1 (2016-11)

Clause	Test Parameter	Remark
	Transmitter parameters	
4.3.1.2	RF Output Power	PASS
4.3.1.3	Power Spectral Density	PASS
4.3.1.3	Duty Cycle, Tx-sequence, Tx-gap	N/A
4.3.1.4	Accumulated Transmit Time, Frequency Occupation and Hopping Sequence	PASS
4.3.1.5	Hopping Frequency Separation	PASS
4.3.1.6	Medium Utilistion	N/A
4.3.1.7	Adaptivity	Not required; RF output power is less than 10dBm E.I.R.P.
4.3.1.8	Occupied Channel Bandwidth	PASS
4.3.1.9	Transmitter unwanted emissions in the out-of-band domain	PASS
4.3.1.10	Transmitter Radiated Spurious Emissions	PASS
	Receiver parameters	
4.3.1.11	Receiver Spurious emissions	PASS
4.3.1.12	Receiver Blocking	PASS

2. Test Configuration of Equipment under Test

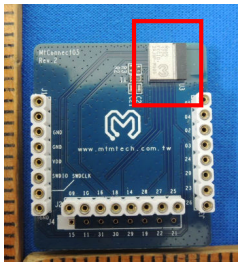
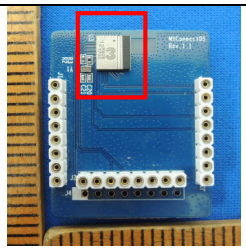
2.1 Feature of Equipment under Test

Modulation Type	BLE:GFSK NFC: ASK
Frequency Range	BLE: 2400-2483.5MHz NFC: 13.56MHz
Data Rate	BLE:1Mbps
Antenna Type	BLE: Chip Antenna NFC: Coil Antenna
Antenna Gain	BLE E1: -3.2 dBi E3: -5.9 dBi

*NFC is passive mode.

2.2 The Difference of EUT

This model no. can use two kinds of RF Antenna.

Item	RF Chip Position
E1	
E3	

2.3 Carrier Frequency of Channels

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
***00**	**2402**	14	2430	28	2458
01	2404	15	2432	29	2460
02	2406	16	2434	30	2462
03	2408	17	2436	31	2464
04	2410	18	2438	32	2466
05	2412	***19**	**2440**	33	2468
06	2414	20	2442	34	2470
07	2416	21	2444	35	2472
08	2418	22	2446	36	2474
09	2420	23	2448	37	2476
10	2422	24	2450	38	2478
11	2424	25	2452	***39**	**2480**
12	2426	26	2454	--	--
13	2428	27	2456	--	--

Note: Channels remarked * are selected to perform test.

2.4 Test Mode & Test Software

a. During testing, the interface cables and equipment positions were varied according to Europe Standard EN 300 328.

b. An executive program,"Nrfgostudio:1.21.2" under WIN 7 was executed to transmit and receive data via Bluetooth.

c. The following test mode was performed for the test:

Test Mode	Operating Description
1	RF Chip: E1, GFSK (1Mbps)
2	RF Chip: E3, GFSK (1Mbps)

2.5 Description of Test System

The EUT was tested alone. No support devices are needed for testing.

2.6 General Information of Test

☒ Test Site	Cerpass Technology Corporation Test Laboratory Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848, Taiwan (R.O.C.) Tel:+886-3-3226-888 Fax:+886-3-3226-881 Address: No.68-1, Shihbachongsi, Shihding Township, New Taipei City 223, Taiwan, R.O.C. Tel: +886-2-2663-8582	
	FCC	TW1079, TW1061, 390316, 228391, 641184
	IC	4934E-1, 4934E-2
	VCCI	T-2205 for Telecommunication Test C-4663 for Conducted emission test R-3428, R-4218 for Radiated emission test G-10812, G-10813 for radiated disturbance above 1GHz
☐ Test Site	Cerpass Technology (Suzhou) Co., Ltd Address: No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China Tel: +86-512-6917-5888 Fax: +86-512-6917-5666	
	FCC	916572, 331395
	IC	7290A-1, 7290A-2
	VCCI	T-1945 for Telecommunication Test C-2919 for Conducted emission test R-2670 for Radiated emission test G-227 for radiated disturbance above 1GHz
Test Condition	Normal Temperature : 25℃ Extreme Temperature : -40℃ and 85℃	

3. Test Equipment and Ancillaries Used for Tests

Instrument	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
Bilog Antenna	Schwarzbeck	VULB9168	369	2017/03/15	2018/03/14
Active Loop Antenna	EMCO	6507	40855	2017/05/15	2018/05/14
Horn Anrenna	EMCO	3115	31589	2017/02/18	2018/02/17
Horn Anrenna	EMCO	3116	31970	2017/03/29	2018/03/28
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200207	2017/03/17	2018/03/16
Preamplifier	EM	EM330	060659	2017/03/13	2018/03/12
Preamplifier	EMC INSTRUMENTS	EMC051845 SE	980333	2017/09/20	2018/09/19
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2017/11/06	2018/11/05
MXG MW Analog Signal Generator	KEYSIGHT	N5183A	MY50142931	2017/03/17	2018/03/16
MXG-B RF Vector Signal Generator	KEYSIGHT	N5182B	MY53051383	2017/03/17	2018/03/16
Spectrum Analyzer	R&S	FSP40	100047	2017/02/13	2018/02/12
BLUETOOTH TESTER	R&S	CBT	101133	2017/03/10	2018/03/09
Attenuator	KEYSIGHT	8491B	MY39250703	2017/03/07	2018/03/06
Rotary Attenuator	Agilent	8495B	MY42146680	2017/03/13	2018/03/12
Temp & Humi chamber	T-MACHINE	TMJ-9712	T-12-040111	2017/09/04	2018/09/03
Series Power Meter	Anritsu	ML2495A	1224005	2017/03/01	2018/02/28
Power Sensor	Anritsu	MA2411B	1207295	2017/03/01	2018/02/28
USB Average Power Sensor	Theda	4PS6A	TW5451013~16	2016/11/08	2018/11/07
Software	AUDIX	E3	V8.2014-8-6	N/A	N/A
Software	Keysight	Console	v0.01	N/A	N/A
Software	Keysight	ETSI Standard Test System	1.00.21	N/A	N/A
Software	Keysight	N7607B Signal Studio	V3.0.0.0	N/A	N/A
Software	Keysight	Inservice Monitor Utility	N/A	N/A	N/A

4. Transmitter Parameters

4.1 RF output power

4.1.1 Limit

For non-adaptive frequency hopping systems

The maximum RF output power for non-adaptive Frequency Hopping equipment, shall be declared by the manufacturer. The maximum RF output power for this equipment shall be equal to or less than the value declared by the manufacturer. This declared value shall be equal to or less than 20dBm.

For adaptive frequency hopping systems

The maximum RF output power for adaptive Frequency Hopping equipment shall be equal to or less than 20dBm.

4.1.2 Test Procedure

According to ETSI EN 300 328 V2.1.1 (2016-11) Clause 5.4.2.

4.1.3 Test Result and Data

P(e.i.r.p) = A (Pburst value) + G (antenna gain) + Y (beamforming gain)
Test Date: Nov. 08, 2017 Temperature: 21℃
Humidity: 68% Atmospheric pressure: 1022 hPa
Test Mode: Mode 1

Modulation Standard: GFSK			
Test conditions	Transmitter power (dBm) e.i.r.p		
	CH0 2402MHz	CH19 2440MHz	CH39 2480MHz
Tnom	2.04	2.03	2.00
Tmin	3.50	3.50	3.49
Tmax	0.46	0.40	0.40
Measurement uncertainty (dB)	+0.28/-0.3		

Note:
1. All the transmitter rates had been pre-tested, and the test data is worst case.

P(e.i.r.p) = A (Pburst value) + G (antenna gain) + Y (beamforming gain)
Test Date: Nov. 08, 2017 Temperature: 21℃
Humidity: 68% Atmospheric pressure: 1022 hPa
Test Mode: Mode 2

Modulation Standard: GFSK			
Test conditions	Transmitter power (dBm) e.i.r.p		
	CH0 2402MHz	CH19 2440MHz	CH39 2480MHz
Tnom	-0.66	-0.67	-0.70
Tmin	0.80	0.80	0.79
Tmax	-2.24	-2.30	-2.30
Measurement uncertainty (dB)	+0.28/-0.3		

Note:
1. All the transmitter rates had been pre-tested, and the test data is worst case.

4.2 Transmitter Power Spectral Density

4.2.1 Limit

The maximum power density is defined as the highest instantaneous level of power in Watts per Hertz generated by the transmitter within the power envelope. For wide band modulations other than FHSS (e.g. DSSS, OFDM, etc) the maximum e.i.r.p. spectral density is limited to 10 mW per MHz.

4.2.2 Test Procedure

According to ETSI EN 300 328 V2.1.1 (2016-11) Clause 5.4.2.

4.2.3 Test Result and Data

PD(e.i.r.p) = D (mean power) + G (antenna gain)

Test Date: Nov. 08, 2017 Temperature: 21℃

Humidity: 68% Atmospheric pressure: 1022 hPa

Test Mode: Mode 1

Modulation Standard: GFSK				
Test conditions	Modulation Standard	Power Spectral Density (dBm)		
		CH0 2402MHz	CH19 2440MHz	CH39 2480MHz
Measured	GFSK	1.96	1.95	1.92
Measurement uncertainty (dB)		+1.5/-1.4		

Note:

1. All the transmitter rates had been pre-tested, and the test data is worst case.

Test Date: Nov. 08, 2017 Temperature: 21℃

Humidity: 68% Atmospheric pressure: 1022 hPa

Test Mode: Mode 2

Modulation Standard: GFSK				
Test conditions	Modulation Standard	Power Spectral Density (dBm)		
		CH0 2402MHz	CH19 2440MHz	CH39 2480MHz
Measured	GFSK	1.96	1.95	1.92
Measurement uncertainty (dB)		+1.5/-1.4		

Note:

1. All the transmitter rates had been pre-tested, and the test data is worst case.

4.3 Duty Cycle, TX-sequence, TX-gap

Not applicable for adaptive equipment.

4.4 Dwell time, Minimum Frequency Occupation and Hopping Sequence

Not applicable, only apply to frequency hopping equipment.

4.5 Hopping Frequency Separation

Not applicable, only apply to frequency hopping equipment.

4.6 Medium Utilisation (MU) factor

Not applicable for adaptive equipment.

4.7 Adaptivity

Not required; RF Output power is less than 10dBm E.I.R.P.

4.8 Occupied Channel Bandwidth

4.8.1 Limit

The occupied Channel Bandwidth for each hopping frequency shall fall completely within the band 2,4 GHz to 2,483 5 GHz (f L > 2,4 GHz and f H < 2,483 5 GHz).

For non-adaptive using wide band modulations other than FHSS system and e.i.r.p > 10dBm	Less than 20MHz
For non-adaptive Frequency Hopping system and e.i.r.p > 10dBm	Less than 5MHz

4.8.2 Test procedure

According to ETSI EN 300 328 V2.1.1 (2016-11) Clause 5.4.7.

4.8.3 Test Result and Data

Test Date: Nov. 08, 2017 Temperature: 21℃

Humidity: 68% Atmospheric pressure: 1022 hPa

Test Mode: Mode 1

GFSK				
Channel	Frequency (MHz)	99% Occupied BW(MHz)	F_L>2400 (MHz)	F_H<2483.5 (MHz)
0	2402	1.08	2401.46	2402.54
39	2480	1.08	2479.46	2480.54
Measurement Uncertainty(kHz)			±120	

Test Date: Nov. 08, 2017 Temperature: 21℃

Humidity: 68% Atmospheric pressure: 1022 hPa

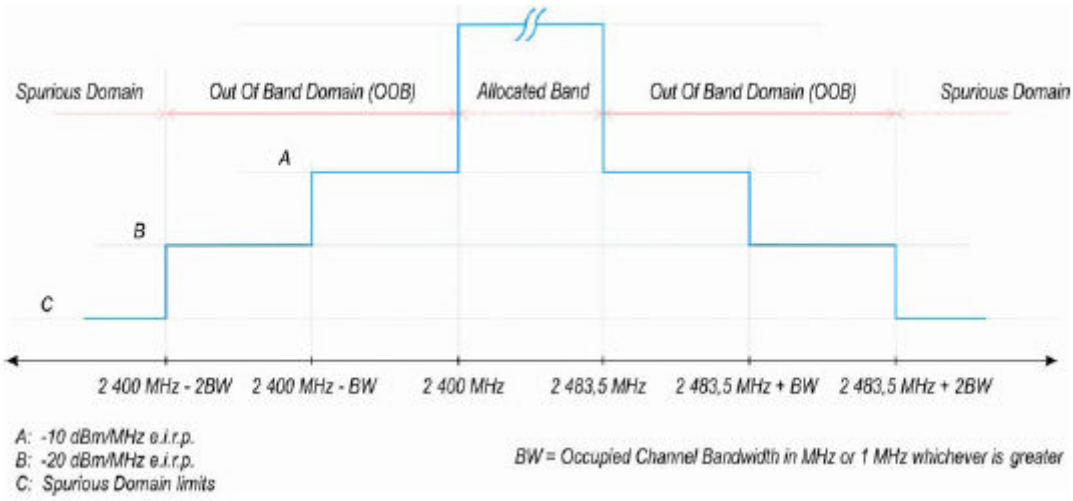
Test Mode: Mode 2

GFSK				
Channel	Frequency (MHz)	99% Occupied BW(MHz)	F_L>2400 (MHz)	F_H<2483.5 (MHz)
0	2402	1.08	2401.46	2402.54
39	2480	1.08	2479.46	2480.54
Measurement Uncertainty(kHz)			±120	

4.9 Transmitter unwanted emission in the out-of-band (OOB) domain

4.9.1 Limit

The transmitter unwanted emissions in the out-of-band domain but outside the allocated band, shall not exceed the values provided by the mask in figure 1.



2400MHz – BW ~ 2400MHz	-10dBm
2483.5MHz ~ 2483.5MHz + BW	
2400MHz - 2BW ~ 2400MHz - BW	-20dBm
2483.5MHz + BW ~ 2483.5MHz + 2BW	

4.9.2 Test procedure

According to ETSI EN 300 328 V2.1.1 (2016-11) Clause 5.4.8.

4.9.3 Test Result and Data

Test Date: Nov. 08, 2017
Humidity: 68%
Test Mode: Mode 1

Temperature: 21℃
Atmospheric pressure: 1022 hPa

GFSK		
Frequency (MHz)	OOB Frequency (MHz)	OOB Emissions (dBm)
2402	2399.50	-51.28
2402	2398.43	-54.94
2480	2484.00	-54.19
2480	2485.08	-54.87

Test Date: Nov. 08, 2017
Humidity: 68%
Test Mode: Mode 2

Temperature: 21℃
Atmospheric pressure: 1022 hPa

GFSK		
Frequency (MHz)	OOB Frequency (MHz)	OOB Emissions (dBm)
2402	2399.50	-53.98
2402	2398.43	-57.64
2480	2484.00	-56.89
2480	2485.08	-57.57

4.10 Transmitter Radiated Spurious Emissions

4.10.1 Limit

According to ETSI EN 300 328 V2.1.1 (2016-11) Section 4.3.2.9.3.

Frequency Range	Maximum power, e.r.p. (≦1GHz) e.i.r.p. (>1GHz)	Bandwidth
30 MHz to 47 MHz	-36dBm	100KHz
47 MHz to 74 MHz	-54dBm	100KHz
74 MHz to 87.5 MHz	-36dBm	100KHz
87.5 MHz to 118 MHz	-54dBm	100KHz
118 MHz to 174 MHz	-36dBm	100KHz
174 MHz to 230 MHz	-54dBm	100KHz
230 MHz to 470 MHz	-36dBm	100KHz
470 MHz to 862 MHz	-54dBm	100KHz
862 MHz to 1 GHz	-36dBm	100KHz
1 GHz to 12.75 GHz	-30dBm	1MHz

4.10.2 Test Procedure

According to ETSI EN 300 328 V2.1.1 (2016-11) Section 5.4.9.

4.10.3 Test Result and Data

Test Date: Nov. 08, 2017
Humidity: 68%
Test Mode: Mode 1

Temperature: 21℃
Atmospheric pressure: 1022 hPa

GFSK, Below 1GHz

Lowest frequency CH0 2402MHz				
Frequency (MHz)	Antenna Polarization	Read level (dBm)	Correct Factor	Spurious emission level (dBm)
57.16	V	-73.77	5.23	-68.54
762.35	V	-76.30	12.72	-63.58
819.58	V	-75.83	12.82	-63.01
51.34	H	-77.75	5.51	-72.24
760.41	H	-76.41	12.53	-63.88
856.44	H	-76.95	13.18	-63.77

Highest frequency CH39 2480MHz				
Frequency (MHz)	Antenna Polarization	Read level (dBm)	Correct Factor	Spurious emission level (dBm)
57.16	V	-75.72	5.23	-70.49
802.12	V	-76.47	12.76	-63.71
836.07	V	-76.85	12.88	-63.97
51.34	H	-76.70	5.51	-71.19
798.24	H	-75.98	12.73	-63.25
857.41	H	-76.42	13.20	-63.22

GFSK, 1GHz ~ 12.75GHz

Lowest frequency CH0 2402MHz				
Frequency (MHz)	Antenna Polarization	Read level (dBm)	Correct Factor	Spurious emission level (dBm)
4804.00	V	-41.72	-8.89	-50.61
7206.00	V	-42.93	-5.23	-48.16
4804.00	H	-41.01	-9.08	-50.09
7206.00	H	-40.48	-5.44	-45.92
Measurement uncertainty: ±3.88 (dB)				

Highest frequency CH39 2480MHz				
Frequency (MHz)	Antenna Polarization	Read level (dBm)	Correct Factor	Spurious emission level (dBm)
4960.00	V	-40.36	-8.14	-48.50
7440.00	V	-43.47	-4.18	-47.65
4960.00	H	-38.29	-8.45	-46.74
7440.00	H	-42.73	-4.62	-47.35
Measurement uncertainty: ±3.88 (dB)				

Note:

1. Spurious emissions were measured from 30MHz to 12.75GHz.
2. " # " Shown the data come with in 6dB below the limit values, the resolution band switched to 30kHz, the level changed less than 2dB, so it's a narrow band emission.
3. According to technical experiences, all spurious emission at the highest and lowest frequency are almost the same below 1GHz, so that the worse case was chosen as representative in final test.
4. All the transmitter rates had been pre-tested, and the test data is worst case.

Test Date: Nov. 08, 2017
Humidity: 68%
Test Mode: Mode 2

Temperature: 21℃
Atmospheric pressure: 1022 hPa

GFSK, Below 1GHz

Lowest frequency CH0 2402MHz				
Frequency (MHz)	Antenna Polarization	Read level (dBm)	Correct Factor	Spurious emission level (dBm)
57.16	V	-73.98	5.23	-68.75
749.74	V	-76.07	12.70	-63.37
853.53	V	-76.14	12.99	-63.15
57.16	H	-76.86	5.50	-71.36
92.08	H	-65.85	-3.91	-69.76
844.80	H	-75.95	13.01	-62.94

Highest frequency CH39 2480MHz				
Frequency (MHz)	Antenna Polarization	Read level (dBm)	Correct Factor	Spurious emission level (dBm)
57.16	V	-73.38	5.23	-68.15
762.35	V	-76.38	12.72	-63.66
788.54	V	-75.60	12.75	-62.85
55.22	H	-76.71	5.50	-71.21
818.61	H	-76.72	12.85	-63.87
823.46	H	-76.70	12.88	-63.82

GFSK, 1GHz ~ 12.75GHz

Lowest frequency CH0 2402MHz				
Frequency (MHz)	Antenna Polarization	Read level (dBm)	Correct Factor	Spurious emission level (dBm)
4804.00	V	-42.36	-8.89	-51.25
7206.00	V	-43.19	-5.23	-48.42
4804.00	H	-42.04	-9.08	-51.12
7206.00	H	-46.49	-5.44	-51.93
Measurement uncertainty: ±3.88 (dB)				

Highest frequency CH39 2480MHz				
Frequency (MHz)	Antenna Polarization	Read level (dBm)	Correct Factor	Spurious emission level (dBm)
4960.00	V	-39.70	-8.14	-47.84
7440.00	V	-40.81	-4.18	-44.99
4960.00	H	-46.99	-8.45	-55.44
7440.00	H	-46.03	-4.62	-50.65
Measurement uncertainty: ±3.88 (dB)				

Note:

1. Spurious emissions were measured from 30MHz to 12.75GHz.
2. " # " Shown the data come with in 6dB below the limit values, the resolution band switched to 30kHz, the level changed less than 2dB, so it's a narrow band emission.
3. According to technical experiences, all spurious emission at the highest and lowest frequency are almost the same below 1GHz, so that the worse case was chosen as representative in final test.
4. All the transmitter rates had been pre-tested, and the test data is worst case.

5. Receiver Parameters

5.1 Receiver Spurious Emissions

5.1.1 Limit

According to ETSI EN 300 328 V2.1.1 (2016-11) Section 4.3.2.10.3.

Frequency Range	Maximum power e.r.p. (≦1GHz) e.i.r.p. (>1GHz).	Measurement bandwidth
30 MHz to 1 GHz	-57dBm	100KHz
1 GHz to 12,75 GHz	-47dBm	1MHz

5.1.2 Test Procedure

According to ETSI EN 300 328 V2.1.1 (2016-11) Section 5.4.10.

5.1.3 Test Result and Data

Test Date: Nov. 08, 2017

Temperature: 21℃

Humidity: 68%

Atmospheric pressure: 1022 hPa

Test Mode: Mode 1

GFSK, Below 1GHz

Lowest frequency CH0 2402MHz				
Frequency (MHz)	Antenna Polarization	Read level (dBm)	Correct Factor	Spurious emission level (dBm)
57.16	V	-75.52	5.23	-70.29
942.77	V	-77.09	14.93	-62.16
952.47	V	-76.64	15.10	-61.54
51.34	H	-76.77	5.51	-71.26
907.85	H	-76.04	14.27	-61.77
996.12	H	-76.31	14.85	-61.46

Highest frequency CH39 2480MHz				
Frequency (MHz)	Antenna Polarization	Read level (dBm)	Correct Factor	Spurious emission level (dBm)
57.16	V	-73.73	5.23	-68.50
947.62	V	-76.93	15.05	-61.88
958.29	V	-76.43	15.07	-61.36
60.07	H	-77.00	5.48	-71.52
926.28	H	-76.51	14.69	-61.82
939.86	H	-76.92	15.00	-61.92

GFSK, 1GHz ~ 12.75GHz

Lowest frequency CH0 2402MHz				
Frequency (MHz)	Antenna Polarization	Read level (dBm)	Correct Factor	Spurious emission level (dBm)
4802.00	V	-42.32	-8.90	-51.22
4802.00	H	-41.19	-9.09	-50.28
Measurement uncertainty: ±3.88 (dB)				

Highest frequency CH39 2480MHz				
Frequency (MHz)	Antenna Polarization	Read level (dBm)	Correct Factor	Spurious emission level (dBm)
4958.00	V	-39.84	-8.16	-48.00
4958.00	H	-41.06	-8.47	-49.53
Measurement uncertainty: ±3.88 (dB)				

Note:

1. Spurious emissions were measured from 30MHz to 12.75GHz.
2. " # " Shown the data come with in 6dB below the limit values, the resolution band switched to 30kHz, the level changed less than 2dB, so it's a narrow band emission.
3. According to technical experiences, all spurious emission at the highest and lowest frequency are almost the same below 1GHz, so that the worse case was chosen as representative in final test.
4. All the transmitter rates had been pre-tested, and the test data is worst case.
5. Result = Read Value + Factor

Test Date: Nov. 08, 2017

Temperature: 21℃

Humidity: 68%

Atmospheric pressure: 1022 hPa

Test Mode: Mode 2

GFSK, Below 1GHz

Lowest frequency CH0 2402MHz				
Frequency (MHz)	Antenna Polarization	Read level (dBm)	Correct Factor	Spurious emission level (dBm)
57.16	V	-74.32	5.23	-69.09
945.68	V	-77.02	14.99	-62.03
980.60	V	-76.50	15.01	-61.49
92.08	H	-64.04	-3.91	-67.95
966.05	H	-76.86	15.09	-61.77
978.66	H	-75.81	14.99	-60.82

Highest frequency CH39 2480MHz				
Frequency (MHz)	Antenna Polarization	Read level (dBm)	Correct Factor	Spurious emission level (dBm)
57.16	V	-75.38	5.23	-70.15
909.79	V	-76.55	14.14	-62.41
956.35	V	-77.22	15.08	-62.14
92.08	H	-63.54	-3.91	-67.45
900.09	H	-76.68	14.09	-62.59
907.85	H	-75.71	14.27	-61.44

GFSK, 1GHz ~ 12.75GHz

Lowest frequency CH0 2402MHz				
Frequency (MHz)	Antenna Polarization	Read level (dBm)	Correct Factor	Spurious emission level (dBm)
4801.00	V	-41.70	-8.90	-50.60
4801.00	H	-42.43	-9.09	-51.52
Measurement uncertainty: ±3.88 (dB)				

Highest frequency CH39 2480MHz				
Frequency (MHz)	Antenna Polarization	Read level (dBm)	Correct Factor	Spurious emission level (dBm)
4957.00	V	-42.32	-8.16	-50.48
4957.00	H	-43.14	-8.47	-51.61
Measurement uncertainty: ±3.88 (dB)				

Note:

1. Spurious emissions were measured from 30MHz to 12.75GHz.
2. " # " Shown the data come with in 6dB below the limit values, the resolution band switched to 30kHz, the level changed less than 2dB, so it's a narrow band emission.
3. According to technical experiences, all spurious emission at the highest and lowest frequency are almost the same below 1GHz, so that the worse case was chosen as representative in final test.
4. All the transmitter rates had been pre-tested, and the test data is worst case.
5. Result = Read Value + Factor

5.2 Receiver Blocking

5.2.1 Limits

Performance Criteria

The minimum performance criterion shall be a PER less than or equal to 10 %.

Receiver Blocking

Receiver Blocking parameters for Receiver Category 1 equipment			
Wanted signal mean power from companion device (dBm)	Blocking signal frequency	Blocking signal power (dBm) (see note 2)	Type of blocking signal
Pmin + 6 dB	2 380 MHz 2 503,5 MHz	-53	CW
Pmin + 6 dB	2 300 MHz 2 330 MHz 2 360 MHz	-47	CW
Pmin + 6 dB	2 523,5 MHz 2 553,5 MHz 2 583,5 MHz 2 613,5 MHz 2 643,5 MHz 2 673,5 MHz	-47	CW
NOTE 1: Pmin is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined in clause 4.3.2.11.3 in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.			

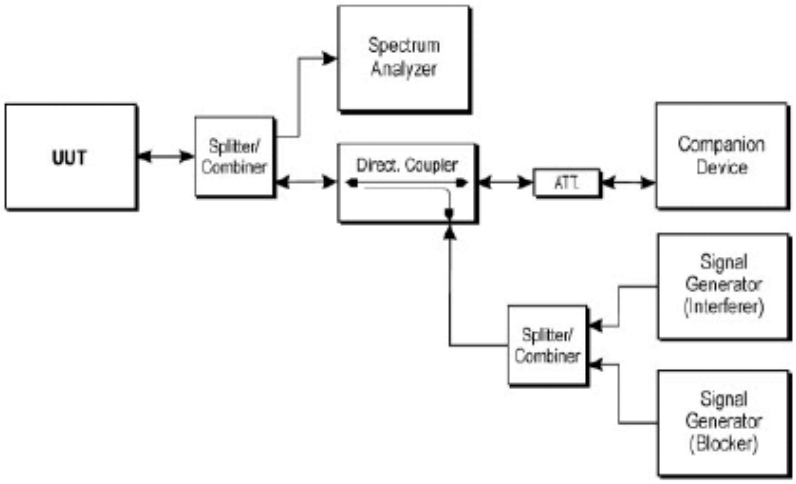
Receiver Blocking parameters for Receiver Category 2 equipment			
Wanted signal mean power from companion device (dBm)	Blocking signal frequency	Blocking signal power (dBm) (see note 2)	Type of blocking signal
Pmin + 6 dB	2 380 MHz 2 503,5 MHz	-57	CW
Pmin + 6 dB	2 300 MHz 2 583.5 MHz	-47	CW
NOTE 1: Pmin is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined in clause 4.3.2.11.3 in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.			

Receiver Blocking parameters for Receiver Category 3 equipment			
Wanted signal mean power from companion device (dBm)	Blocking signal frequency	Blocking signal power (dBm) (see note 2)	Type of blocking signal
Pmin + 12 dB	2 380 MHz 2 503,5 MHz	-57	CW
Pmin + 12 dB	2 300 MHz 2 583.5 MHz	-47	CW
NOTE 1: Pmin is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined in clause 4.3.2.11.3 in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.			

5.2.2 Test procedure

According to ETSI EN 300 328 V2.1.1 (2016-11) Clause 5.4.11.

5.2.3 Test Setup



5.2.4 Test Result and Data

Test Date: Nov. 08, 2017
Temperature: 21℃
Humidity: 68%
Atmospheric pressure: 1022 hPa
Test Mode: Mode 1

Receiver Category 2

Test Channel (MHz)	Blocking Signal Frequency (MHz)	Blocking Level (dBm)	PER (%)	Limit (%)	Test Result
2402	2300	-47	0.07	10	Pass
2402	2380	-57	0.07	10	Pass
2402	2503.5	-57	0.00	10	Pass
2402	2583.5	-47	0.00	10	Pass

Test Channel (MHz)	Blocking Signal Frequency (MHz)	Blocking Level (dBm)	PER (%)	Limit (%)	Test Result
2480	2300	-47	0.07	10	Pass
2480	2380	-57	0.00	10	Pass
2480	2503.5	-57	0.00	10	Pass
2480	2583.5	-47	0.00	10	Pass

Test Date: Nov. 08, 2017
Humidity: 68%
Test Mode: Mode 2

Temperature: 21℃
Atmospheric pressure: 1022 hPa

Receiver Category 3

Test Channel (MHz)	Blocking Signal Frequency (MHz)	Blocking Level (dBm)	PER (%)	Limit (%)	Test Result
2402	2300	-47	0.00	10	Pass
2402	2380	-57	0.00	10	Pass
2402	2503.5	-57	0.00	10	Pass
2402	2583.5	-47	0.00	10	Pass

Test Channel (MHz)	Blocking Signal Frequency (MHz)	Blocking Level (dBm)	PER (%)	Limit (%)	Test Result
2480	2300	-47	0.00	10	Pass
2480	2380	-57	0.00	10	Pass
2480	2503.5	-57	0.00	10	Pass
2480	2583.5	-47	0.00	10	Pass